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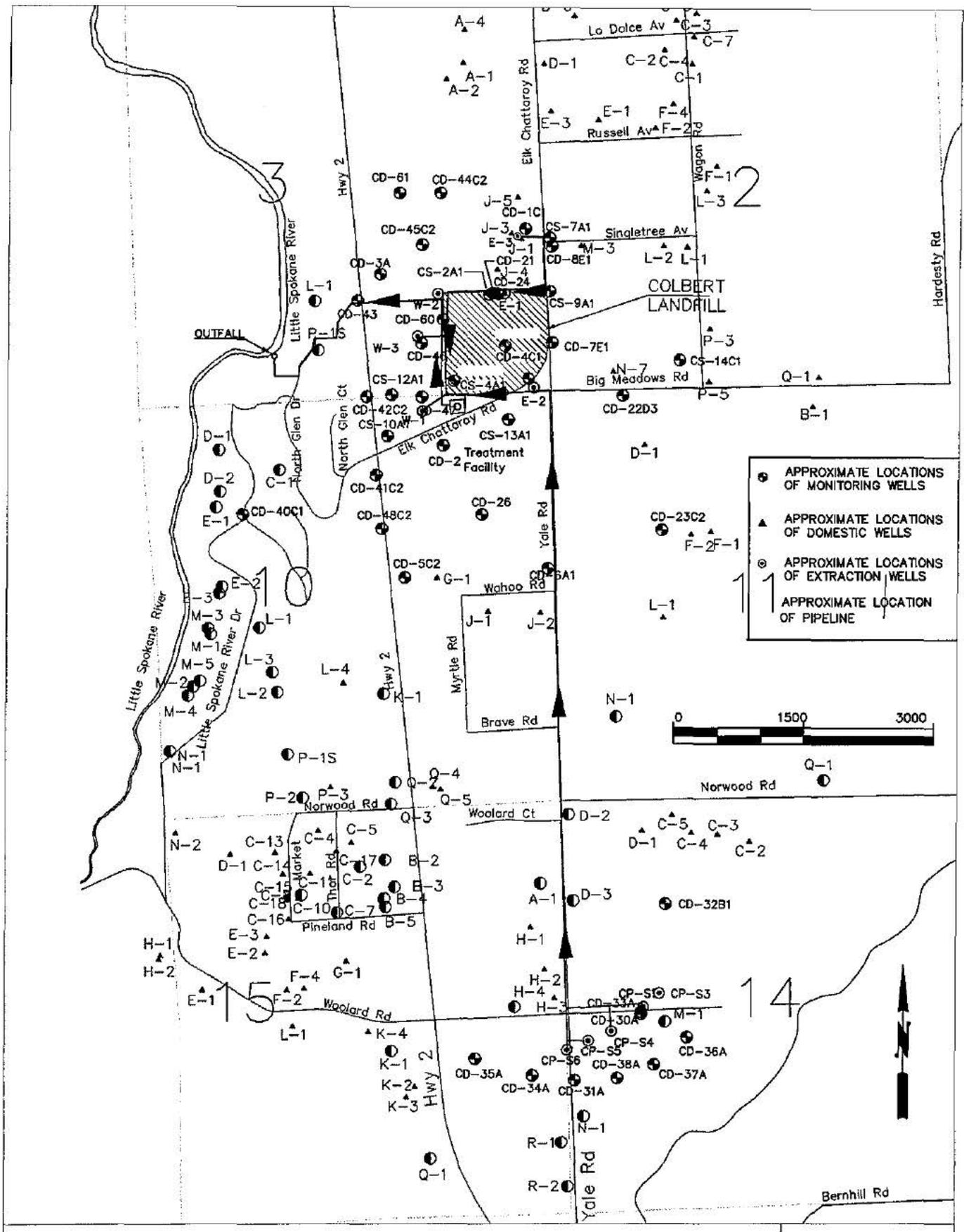
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1.1 COLBERT FACILITY INFORMATION SUMMARY

SITE:	Colbert Landfill, Colbert WA (SE ¼ SE ¼, Section 3, Township 27 north, Range 43 east)
REPORTING PERIOD:	April 1, 2004 through June 30, 2004.
REGULATORY AUTHORITY:	Washington State Department of Ecology, EPA Scope of work for Remedial Action as stated in the consent decree.
TECHNOLOGY:	Pump and treat extraction system using above ground airstripping tower
CONSTITUENTS OF CONCERN:	1,1,1-Trichloroethane (TCA), 1,1-Dichloroethane (DCA), 1,1-Dichloroethene (DCE), Trichloroethene (TCE), Tetrachloroethane (PCE), Methylene Chloride (MC)
CRITERIA:	Criteria were established as stated in the Consent Decree. See Table 1-1.
SAMPLING PROGRAMS:	<u>RA compliance and NPDES monitoring</u> - Sampling done in accordance with SAP as stated in the <i>Colbert Landfill Operations and Maintenance Manual, 1998</i> . <u>Domestic well sampling</u> - Sampling done in accordance with the Colbert residential <i>Quality Assurance and Field Sampling Plan, 1991</i> . <u>MFS monitoring</u> - Sampling done in accordance with the <i>MFS Groundwater Monitoring Plan, 1996</i> . See Figure 1-1 for well locations. See Table 1-2 for well designations and Table 1-3 sampling schedule.
FACILITY STARTUP	May 18, 1994
RESULTS:	Total volume of water treated to date is 4183 million gallons. Total mass of constituent of concern contaminants removed from influent to date is 9450 lbs. The effluent from the facility has achieved all applicable criteria since facility startup. All south system (upper aquifer) extraction wells have achieved shutdown/standby status.

Table 1-1 Colbert Landfill Remedial Action Regulatory Criteria

CRITERIA	(ug/L)						(mg/L)									
	TCA	DCE	DCA	TCE	PCE	MC	Cl	Fe	Mn	Zn	TOC	COD	SO4	NO2+NO3	TP	
Criteria to be achieved for completion of RA	Performance															
	200	7	4050	5	0.7	2.5										
Criteria to be achieved in monitoring wells during RA operation	Evaluation															
	200	7	4050	5	7	25										
If exceeded, an adjustment to interception system is needed	Operational Control															
	South	33	NA	610	NA											
	West	31	NA	610	NA											
If exceeded, a modification to interception system is needed	Adjustment Control															
	South	103	4.5	2026	3.3											
	West	101	4.5	2026	3.3											
Monthly sampling initiated, evaluated in 12 months Exceedance requires alternative drinking water source be supplied	Domestic															
	Action Level	130	4.55	2632	3.25	0.5	1.63									
	MCL	200	7	4050	5	0.7	2.5									
NPDES																
	Monthly Maximum Daily		7	4050	5	7	25	230	0.3	0.05						0.93
MFS																
			7	4050	5	7	25	250	0.3	0.05	5	NA	NA	250		10



RA System Components

FIGURE 1-1

Table 1-2 Colbert Landfill Well Designations

WELL ID	AQUIFER	DESIGNATION	MONITORING PROGRAM
CD-31A1	upper	Downgradient	Compliance
CD-34A1	upper	Outboard	Compliance
CD-36A1	upper	Downgradient	Compliance
CD-37A1	upper	Downgradient	Compliance
CD-38A1	upper	Downgradient	Compliance
CP-S3	upper	Outboard	Compliance
CD-41C1	lower	Set A	Compliance
CD-41C2	lower	Set A	Compliance
CD-41C3	lower	Set A	Compliance
CD-42C1	lower	Set A	Compliance
CD-42C2	lower	Set A	Compliance
CD-42C3	lower	Set A	Compliance
CD-43C1	lower	Set B	Compliance
CD-43C2	lower	Set B	Compliance
CD-43C3	lower	Set B	Compliance
CD-44C1	lower	Set B	Compliance
CD-44C2	lower	Set B	Compliance
CD-44C3	lower	Set B	Compliance
CD-45C1	lower	Outboard	Compliance
CD-45C2	lower	Outboard	Compliance
CD-45C3	lower	Outboard	Compliance
CD-48C1	lower	Set A/Outboard	Compliance
CD-48C2	lower	Set A/ Outboard/MFS	Compliance/MFS
CD-48C3	lower	Set A/Outboard	Compliance
CD-03A1	upper	MFS	MFS
CD-60A1	upper	MFS	MFS
CD-61A1	upper	MFS	MFS
CS-04A1	upper	MFS	MFS
CP-S1	upper	Extraction	Compliance
CP-S4	upper	Extraction	Compliance
CP-S5	upper	Extraction	Compliance
CP-S6	upper	Extraction	Compliance
CP-E1	lower	Extraction	Compliance
CP-E2	lower	Extraction	Compliance/MFS
CP-E3	lower	Extraction	Compliance
CP-W1	lower	Extraction	Compliance
CP-W2	lower	Extraction	Compliance
CP-W3	lower	Extraction	Compliance

Table 1-3 Colbert Landfill Sampling Schedule

Parameters and Method	Compliance Wells		NPDES		MFS Wells	
	Monitoring	Extraction	Influent	Effluent	Upper	Lower
VOC'S EPA 8021B**	Annual	Quarterly	Monthly	Monthly	Annual	
Chloride EPA 300.0				Quarterly	Annual	Quarterly for first two years
NO3 + NO2 EPA 535.3				January, May, June, July		
Total Phosphorus EPA 365.3				January, May, June, July		
NO2/NO3/NH3 EPA 300.0/354.1/ 350.1					Annual	Quarterly for first 2 years
SO4/TOC/COD EPA 300.0/415.1/ 410.1					Annual	Quarterly for first 2 years
Fe, Mn EPA 6010				Quarterly	Annual	Quarterly for first 2 years
Zn EPA 6010					Annual	Quarterly for first 2 years
Toxicity				Semi-Annual		

*Domestic Sampling: performed monthly, schedule varies, VOC analysis done by EPA 524.2

**EPA Method 8021B has replaced EPA Method 8010

2.1 PERFORMANCE DATA

2.1.1 FIELD DATA

UPPER AQUIFER

Field parameters for this reporting period are shown in Table 2-1. Compliance monitoring well CP-S3 exhibited the highest turbidity in the sampled upper aquifer wells. The pH readings taken in upper aquifer wells ranged from 6.9 to 7.6. In general, groundwater elevations in the upper aquifer wells upgradient from the extraction wells increased while levels in the region of extraction remained consistent with previous quarterly data (Figure 2-1). Upper aquifer groundwater elevation contours and flow paths are presented in Figure 2-2.

LOWER AQUIFER

Lower aquifer extraction well field parameters are presented in Table 2-1. East system extraction wells exhibit higher conductivities and lower pH values than the west system extraction wells. Extraction well CP-E2 had the highest conductivity at 980 umhos/cm. Conductivity values at compliance monitoring wells ranged from 270 to 507 umhos/cm. A higher than normal temperature (at 19.5° C) was recorded at compliance monitoring well CD-42C2. It is possible this temperature was the result of a problem with the sampling pump and further observations will be made to determine the cause. Groundwater elevations in the lower aquifer increased when compared with the previous quarter (Figure 2-3). Figure 2-4 presents lower aquifer groundwater elevation contours and flow paths.

INFLUENT/EFFLUENT

Field parameters taken at the influent and effluent throughout the reporting period are shown in Figure 2-5 and Figure 2-6.

2.1.2 CRITERIA EXCEEDANCES

UPPER AQUIFER

All south system extraction wells had constituent of concern concentrations below evaluation criteria and adjustment control criteria (Table 2-2). All compliance monitoring wells and domestic wells sampled during this reporting period were below applicable criteria as well.

LOWER AQUIFER

Extraction wells CP-E1, CP-E2, CP-E3, CP-W2 and CP-W3 had DCE concentrations above the evaluation criteria (Table 2-2). Extraction wells CP-E2 and CP-W3 had TCE concentrations above the evaluation criteria as well. All compliance monitoring wells and domestic wells sampled during this reporting period were below applicable criteria.

INFLUENT/EFFLUENT

Influent samples taken this reporting period exceeded the evaluation criteria for DCE and TCE (Table 2-2). There were no effluent criteria exceedances.

2.1.3 CHEMICAL DATA

UPPER AQUIFER

Constituent of concern concentrations at the south system extraction wells remained consistent (Table 2-3, Figure 2-7 and Figure 2-8). Quarterly analysis of CP-S3 was performed due to the presence of low level MC concentrations found in samples taken from this well since last year. MC was not detected at this well during this reporting period. Concentrations at other upper aquifer compliance monitoring wells were consistent with previous sampling. Concentrations at all upper aquifer compliance monitoring wells were below applicable criteria. Selected upper aquifer domestic wells TCA and DCE concentrations versus time are presented in Figure 2-9. Upper aquifer TCA plume boundaries for the second quarter 2004 are shown in Figure 2-10.

LOWER AQUIFER

When compared to the previous reporting period, constituent of concern concentrations dropped slightly in CP-W3. Constituent of concern concentrations in other extraction wells remain relatively consistent with the previous quarter findings (Figure 2-11 through Figure 2-14). TCA concentrations found in compliance monitoring wells remain consistent with findings from previous sampling. Domestic wells in the lower aquifer show TCA levels consistent with previous quarters and are well below the applicable criteria (Figure 2-15). Lower aquifer TCA plume boundaries for this reporting period are shown in Figure 2-16.

INFLUENT/EFFLUENT

VOC concentrations found in the influent are consistent with the previous quarters (Figure 2-17). Additional VOC analytes detected in the influent include CFC-12, chloroform, cis-1,2-DCE, and trichlorofluoromethane. There were no VOC's detected in the effluent. Effluent conventionals were consistent with previous samplings.

2.1.4 MASS REMOVAL

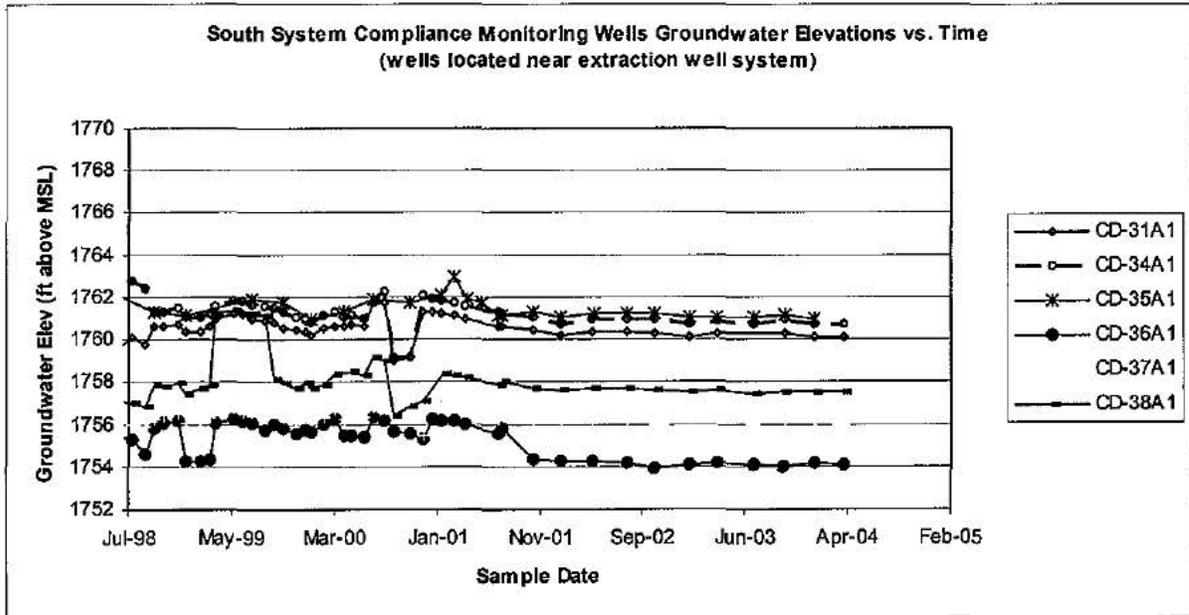
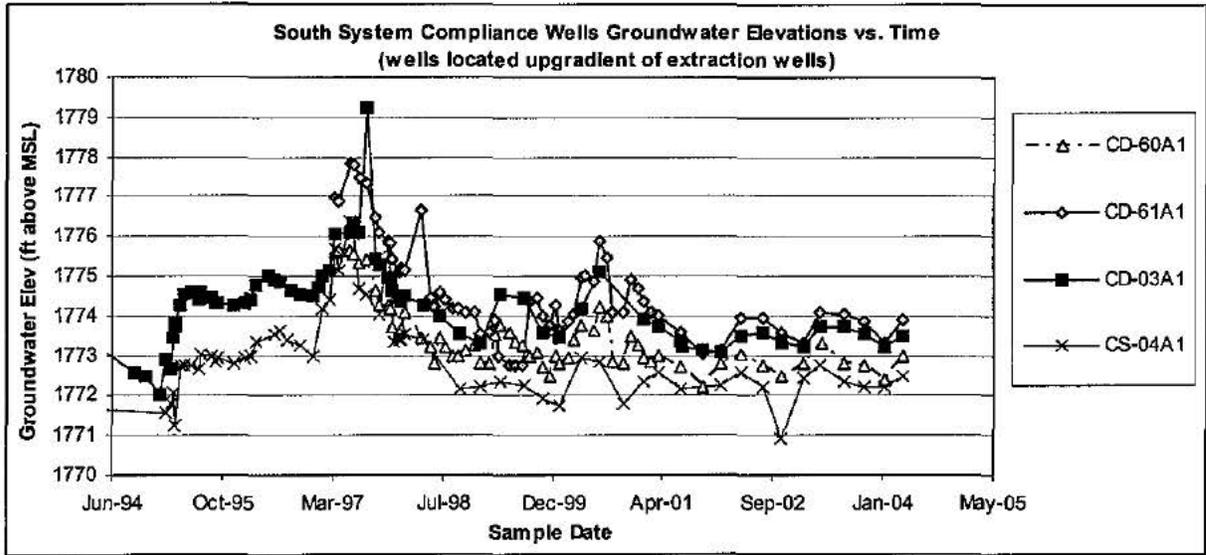
Since facility startup, an approximate 4183 million gallons of water have been treated through the airstripping tower (Figure 2-18). A total of 59 pounds of constituent of concern contaminants were removed from the 85.1 million gallons treated during this reporting period. Last quarter, 54 pounds of constituent of concern contaminants were removed from a total of 78.8 million gallons of water treated.

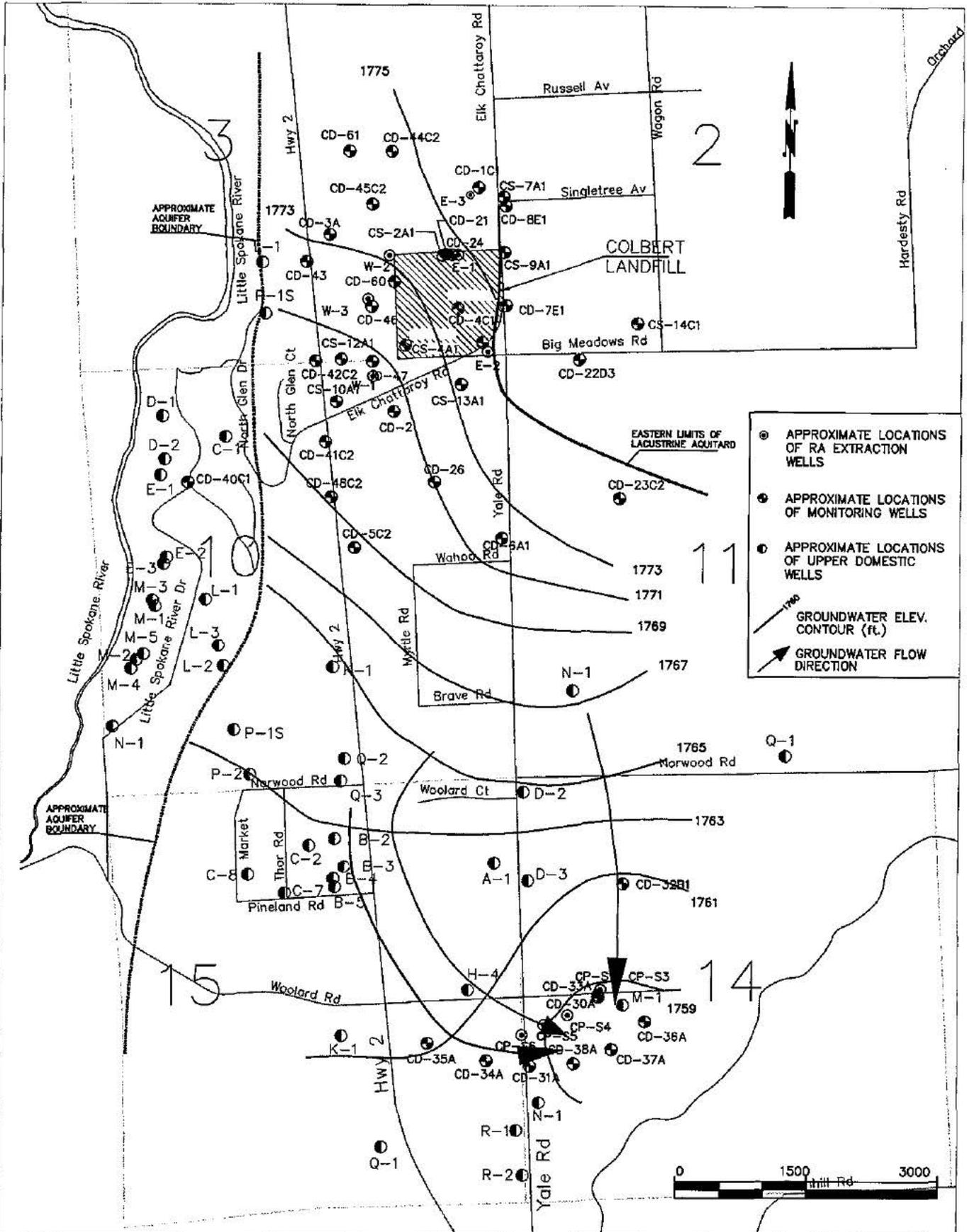
Extraction well CP-W2 contributed the greatest volume of water while CP-W3 contributed the largest mass of constituents received at the facility during this reporting period as compared to the other extraction wells (Figure 2-19). Extraction wells CP-W3 and CP-E1 had the highest mass of constituent removed relative to the volume of groundwater it contributed.

Table 2-1 Colbert Landfill Quarterly Monitoring Well Field Parameters

StationID	SampleDate	FieldTemp	FieldPH	FieldConductivity	FieldTurbidity	Aquifer
CD-40C1	4/13/04	9.7	7.9	507	0.19	lower
CD-41C1	4/13/04	11.9	7.88	380	0.06	lower
CD-41C2	4/13/04	11.8	7.97	370	0.11	lower
CD-41C3	4/13/04	12.6	7.84	420	0.13	lower
CD-42C1	4/12/04	12.9	7.83	410	0.11	lower
CD-42C2	4/12/04	19.5	7.84	420	0.3	lower
CD-42C3	4/12/04	13.4	7.88	360	0.42	lower
CD-43C1	4/12/04	11.4	7.93	280	0.06	lower
CD-43C2	4/12/04	12.3	8.01	310	0.09	lower
CD-43C3	4/12/04	15	7.85	270	7.8	lower
CD-44C1	4/13/04	15.1	7.64	450	0.24	lower
CD-44C2	4/13/04	11.2	7.58	400	0.05	lower
CD-44C3	4/13/04	11.5	7.69	360	0.52	lower
CD-45C1	4/13/04	10.2	7.79	430	0.11	lower
CD-45C2	4/13/04	10.3	8.03	270	0.1	lower
CD-45C3	4/14/04	10.8	7.95	380	1.24	lower
CD-48C1	4/12/04	11.7	7.82	410	0.17	lower
CD-48C2	4/12/04	11.9	7.85	390	0.18	lower
CD-48C3	4/12/04	12.4	7.88	400	0.09	lower
CP-E1	4/15/04	11.9	7.05	610	0.09	lower
CP-E2	4/15/04	13.5	7.06	980	0.12	lower
CP-E2	4/15/04	13.5	7.06	980	0.12	lower
CP-E3	4/15/04	11.5	7.2	540	0.52	lower
CP-W1	4/15/04	12	7.82	450	0.16	lower
CP-W2	4/15/04	10.9	7.7	350	0.09	lower
CP-W3	4/15/04	11.9	7.58	470	0.15	lower
CD-03A1	4/14/04	9	7.66	397	0.32	upper
CD-31A1	4/13/04	10.3	7.68	609	4.85	upper
CD-34A1	4/13/04	10	7.52	619	0.72	upper
CD-36A1	4/12/04	10.4	7.5	559	1.8	upper
CD-37A1	4/12/04	10	7.3	616	0.42	upper
CD-38A1	4/12/04	10.5	7.5	541	0.14	upper
CD-60A1	4/14/04	10.7	6.94	550	0.09	upper
CD-60A1	4/14/04	10.7	6.94	550	0.09	upper
CD-61A1	4/14/04	10.3	7.49	360	0.1	upper
CP-S1	4/15/04	10.7	7.27	600	0.7	upper
CP-S3	4/12/04	9.9	7.5	571	14.4	upper
CP-S4	4/15/04	13.1	7.17	630	0.16	upper
CP-S5	4/15/04	10.6	7.29	550	0.21	upper
CP-S6	4/15/04	10.4	7.27	560	0.26	upper

Figure 2-1 Upper Aquifer Groundwater Elevations

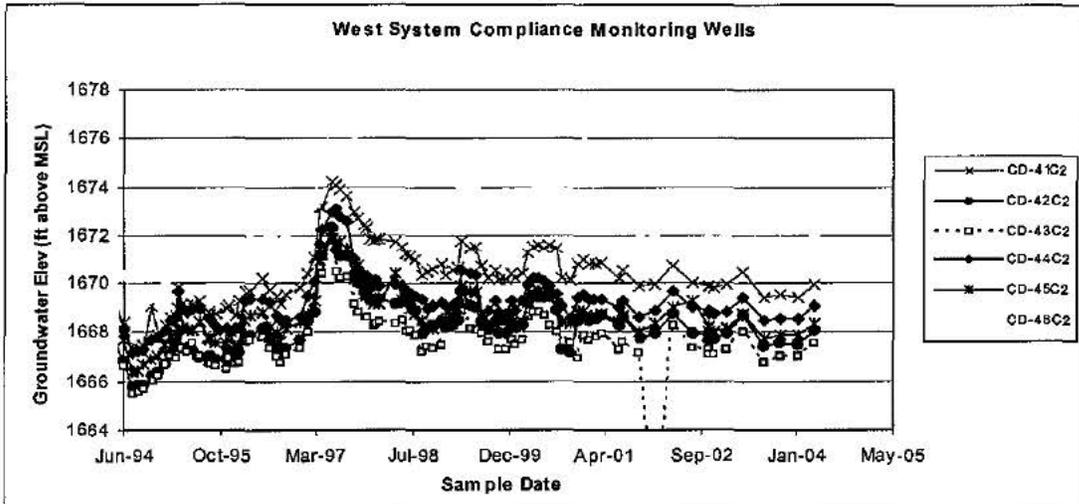
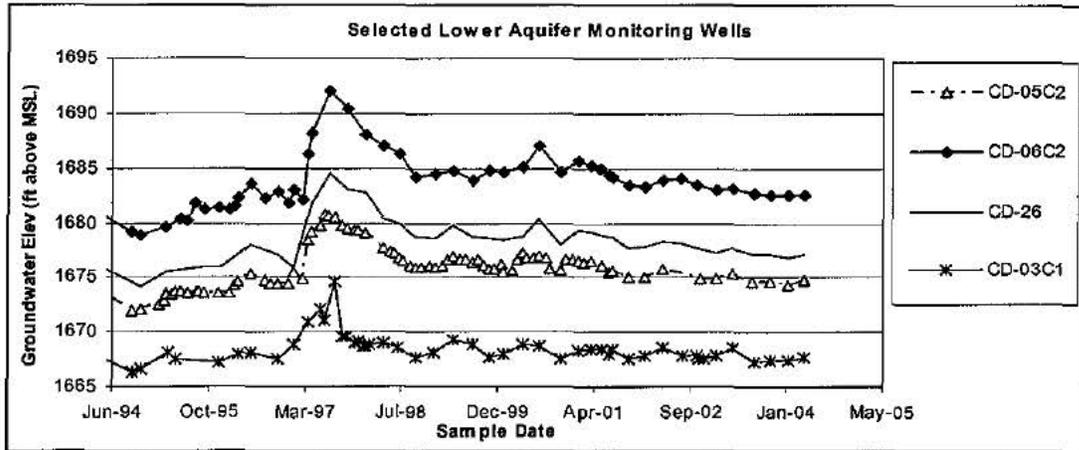


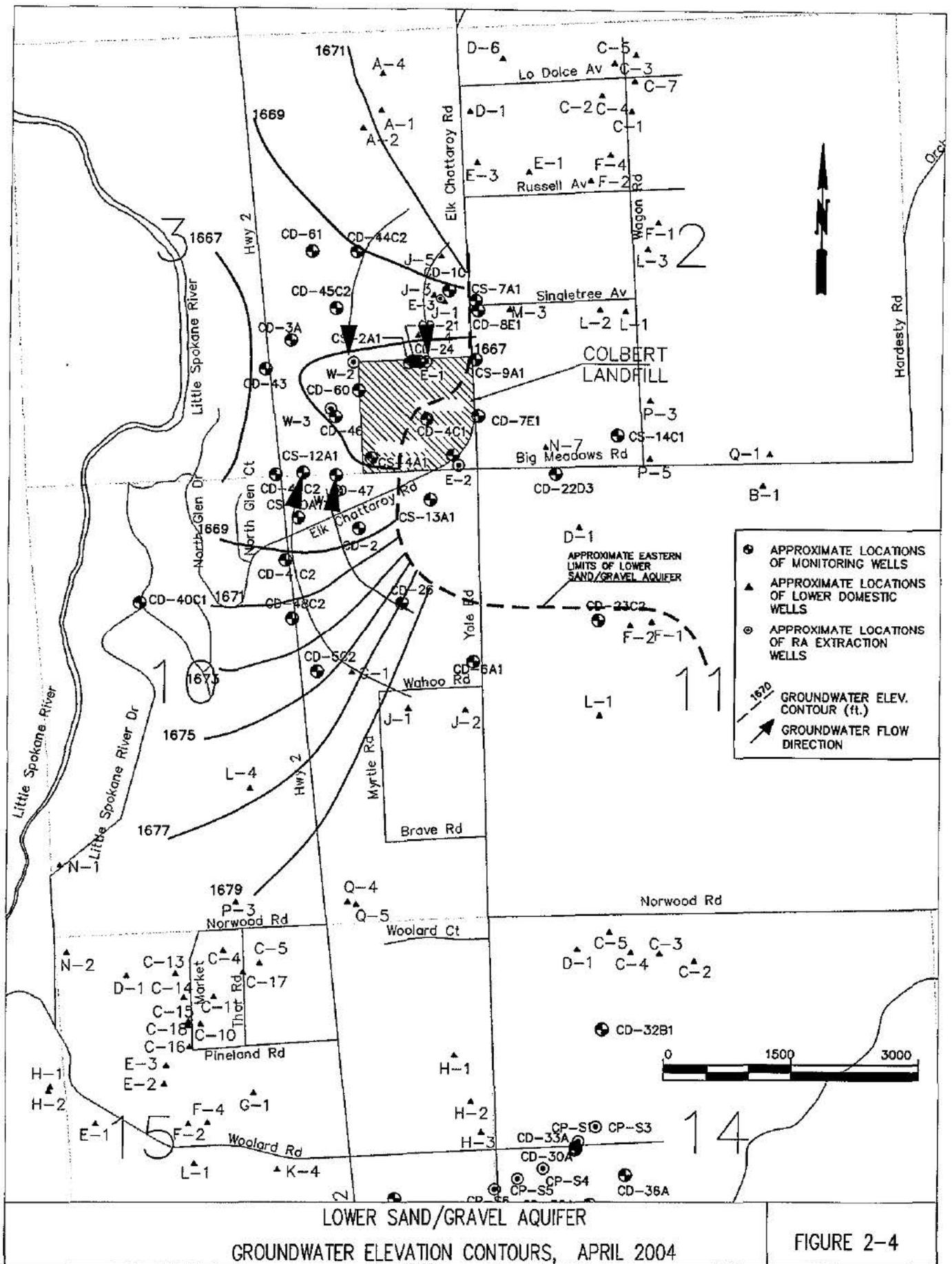


UPPER SAND/GRAVEL AQUIFER
 GROUNDWATER ELEVATION CONTOURS, APRIL 2004

FIGURE 2-2

Figure 2-3 Lower Aquifer Groundwater Elevations vs. Time





LOWER SAND/GRAVEL AQUIFER
GROUNDWATER ELEVATION CONTOURS, APRIL 2004

FIGURE 2-4

Figure 2-5 Influent Field Parameters

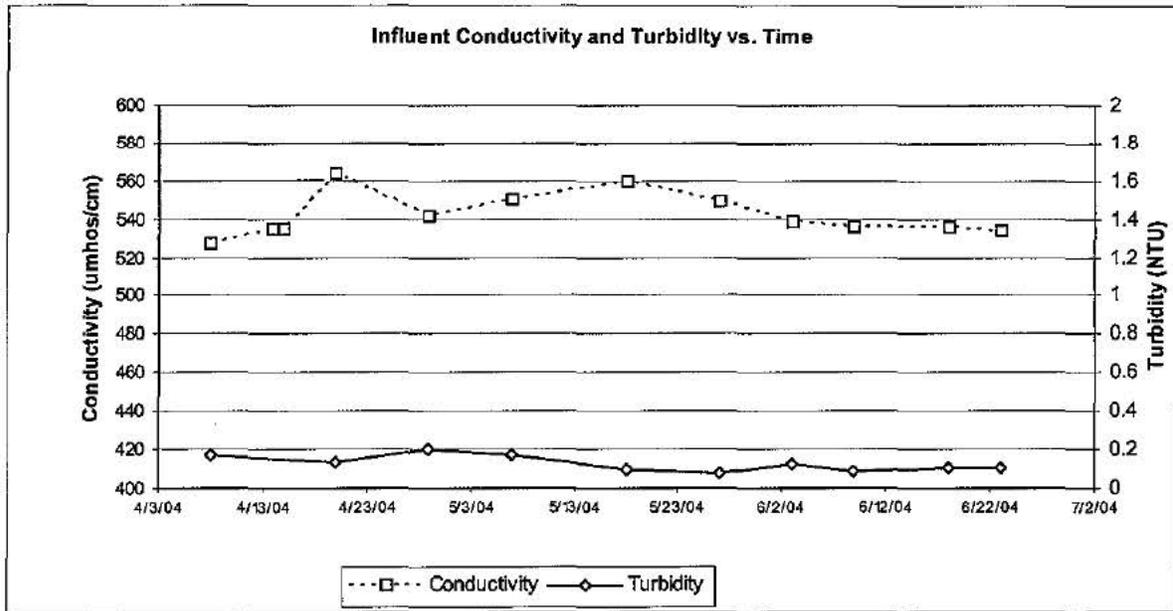
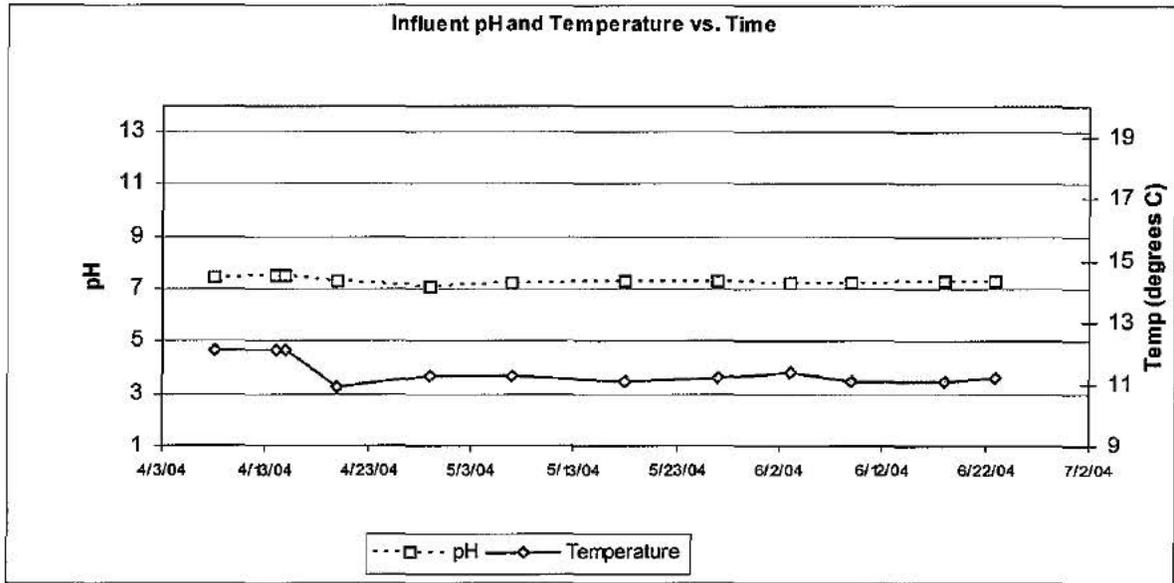


Figure 2-6 Effluent Field Parameters

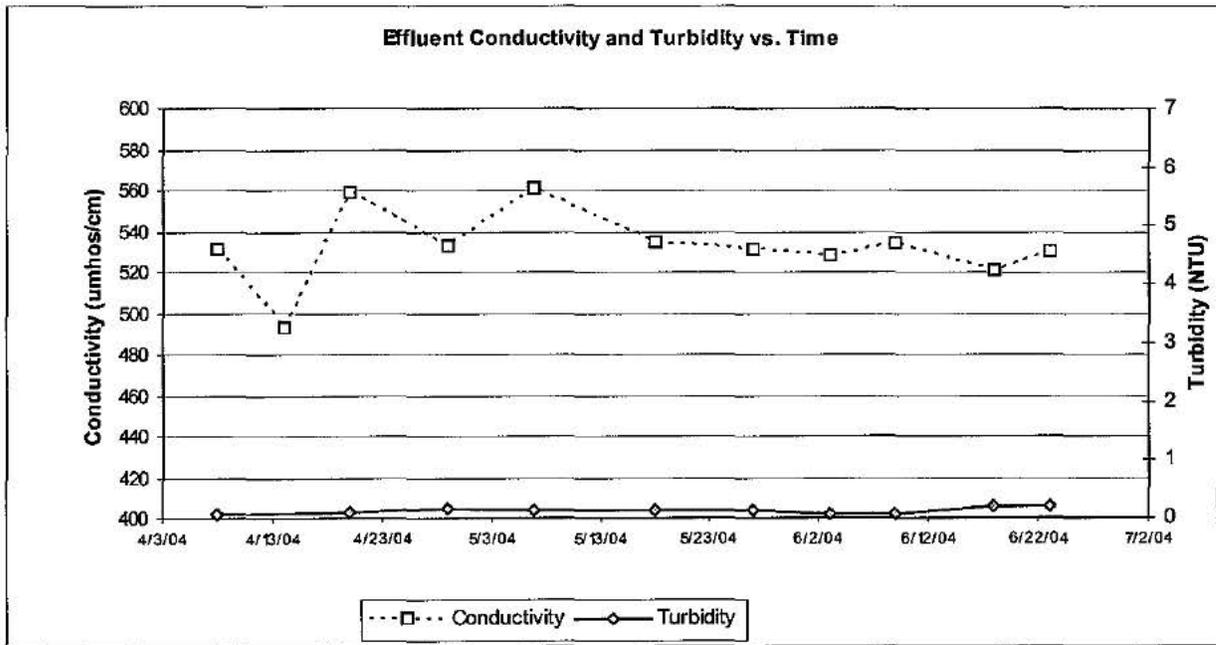
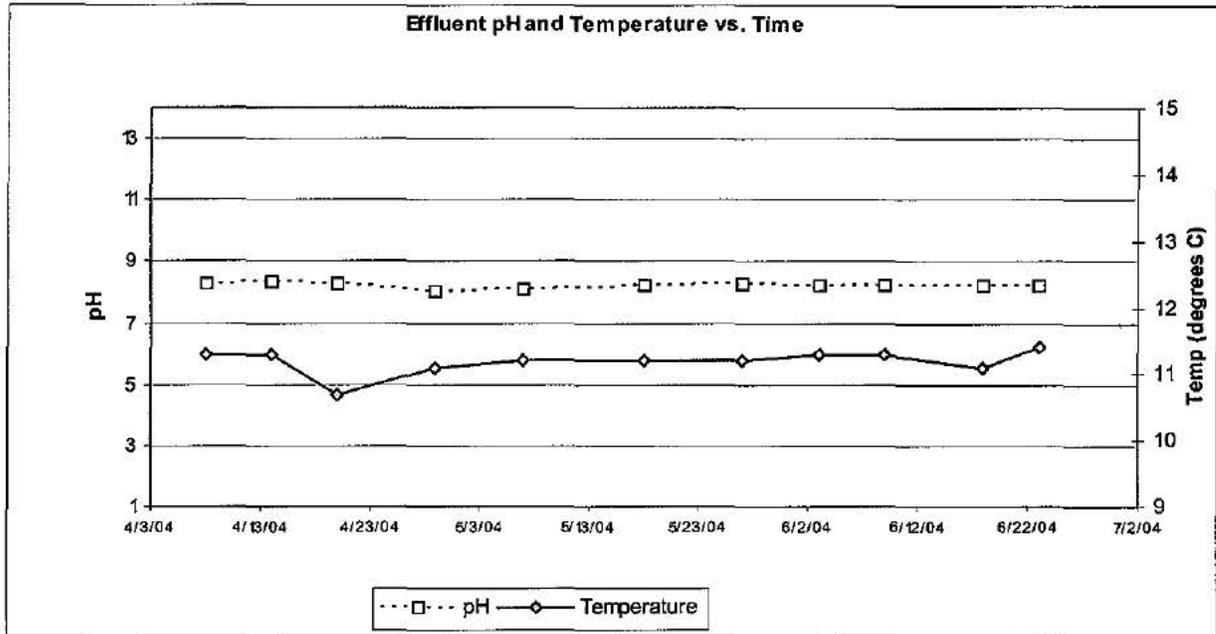


Table 2-2 Evaluation Criteria Exceeded

StationID	SampleDate	AnalyteAbbrev	Concentration
CS-04A1	4/14/04	Mn	0.712
IN20-11	4/14/04	DCE	16.6
IN20-11	4/14/04	TCE	5.02
IN20-11	4/14/04	DCE	15.7
CP-E1	4/15/04	DCE	24.42
CP-E2	4/15/04	TCE	120.5
CP-E2	4/15/04	DCE	95.9
CP-E2	4/15/04	TCE	108.3
CP-E2	4/15/04	DCE	86.3
CP-E3	4/15/04	DCE	10.59
CP-W2	4/15/04	DCE	13.71
CP-W3	4/15/04	DCE	18.9
CP-W3	4/15/04	TCE	12.34
IN20-11	5/18/04	TCE	6.3
IN20-11	5/18/04	DCE	28.8
IN20-11	5/18/04	DCE	29.4
IN20-11	5/18/04	TCE	6.4
IN20-11	6/9/04	DCE	15.71
IN20-11	6/9/04	DCE	16.28

Table 2-3
Analyte Detections for the Second Quarter 2004 (ppb)

Location	1,2-Dichloropropane	CFC 12	Chloroform	cis-1,2-DCE	CI	DCA	DGE	MC	PCE	TGA	TCE	Trichlorofluoromethane	Mn	NO2 + NO3	Carbon Tetrachloride	N-NH3	N-NO3	SO4	TOC	TP	Zn	
CD-03A1 (4/14/2004)					0.74					2.51							0.17	0.238	7.42			0.009
CD-31A1 (4/13/2004)										0.69												
CD-34A1 (4/13/2004)									0.81	0.92												
CD-38A1 (4/12/2004)						20.8																
CD-37A1 (4/12/2004)						0.57				1.45												
CD-38A1 (4/12/2004)										0.68												
CD-40C1 (4/13/2004)						7.68	5.07			11.5												
CD-41C3 (4/13/2004)										4.2												
CD-44C1 (4/13/2004)		0.75					0.6			7.85												
CD-44C2 (4/13/2004)										0.04												
CD-44C3 (4/13/2004)										0.82												
CD-45C1 (4/13/2004)										5.22												
CD-60A1 (4/14/2004)					3.14				0.7	0.8	0.7					0.04	2.3	10.1	1.4			
CD-61A1 (4/14/2004)					0.73		0.82			14.7						0.03	0.244	9.76				
CP-E1 (4/15/2004)		1.73	0.64	1.69		14.74	24.42	1.08	0.67	68.5	4.58	0.83										
CP-E2 (4/15/2004)	0.58	7.17	2.87	25.6		37	95.9		0.97	153.2	120.5	4.92										
CP-E3 (4/15/2004)		1.71	0.9			3.23	10.69			52.5	0.9	0.95										
CP-S1 (4/15/2004)				0.78		5.27	1.27			4.48	2.39											
CP-S4 (4/15/2004)						3.19	1.01		0.79	3.69	2.68											
CP-S5 (4/15/2004)						0.77				1.81												
CP-S6 (4/15/2004)						0.91	0.7			2.11												
CP-W1 (4/15/2004)							1.79			7.13												
CP-W2 (4/15/2004)		0.78		0.68		3.11	13.71			44.2	2.54	0.71										
CP-W3 (4/15/2004)		1.08	0.57	1.21		5.4	18.9			59.3	12.34	1.19										
CS-04A1 (4/14/2004)					11	3.3				0.66	1.07		0.712			0.33	2.17	15.5				0.0052
EF24-02 (4/14/2004)					7.05								0.0029									
EF24-02 (6/9/2004)														4.38							0.03	
IN20-11 (4/14/2004)		1.24		0.84		5.59	16.6			42.8	5.02	0.91										
IN20-11 (5/18/2004)		4.2		1		7.5	29.4			59.2	6.4	1.1										
IN20-11 (6/9/2004)		1.08	0.52	0.86		5.51	16.28			45.52	4.58	0.8			6.93							

Table 2-4 Domestic Well Sampling Results for the Reporting Period

StationID	Aquifer	SampleDate	LastName	TCA	DCA	DCE	MC	PCE	TCE
1573G-1	lower	5/18/2004	(b) (6)	ND	ND	ND	ND	ND	ND
1073J-1	lower	4/20/2004		3.88	ND	ND	ND	ND	ND
0273Q-1	lower	5/17/2004		ND	ND	ND	ND	ND	ND
1073J-2	lower	5/17/2004		0.9	ND	ND	ND	ND	ND
0373A-2	lower	6/7/2004		1.56	ND	ND	ND	ND	ND
1073Q-4	lower	6/7/2004	NORTH MEADOWS WATER	0.56	ND	ND	ND	ND	ND
1473C-4	lower	6/7/2004	(b)	ND	ND	ND	ND	ND	ND
1073D-2	upper	4/19/2004	North Glen Water Assoc.	5.62	3.62	1.59	ND	ND	ND
1073E-3	upper	4/19/2004	(b) (6)	ND	ND	ND	ND	ND	ND
1073P-1	upper	4/19/2004		ND	ND	ND	ND	ND	ND
1473M-1	upper	4/19/2004		ND	ND	ND	ND	ND	ND
1573C-5	upper	4/19/2004		ND	ND	ND	ND	ND	ND
1573C-7	upper	4/19/2004		ND	ND	ND	ND	ND	ND
1573K-1	upper	4/19/2004		ND	ND	ND	ND	ND	ND
1073D-1	upper	5/17/2004		5.4	1.9	0.8	ND	ND	ND
0373L-1	upper	5/18/2004		ND	ND	ND	ND	ND	ND
1073M-5	upper	6/7/2004		ND	ND	ND	ND	ND	ND
1473D-2	upper	6/9/2004		ND	ND	ND	ND	ND	ND

Figure 2-7 South System Extraction Wells TCA, DCA and DCE Concentrations

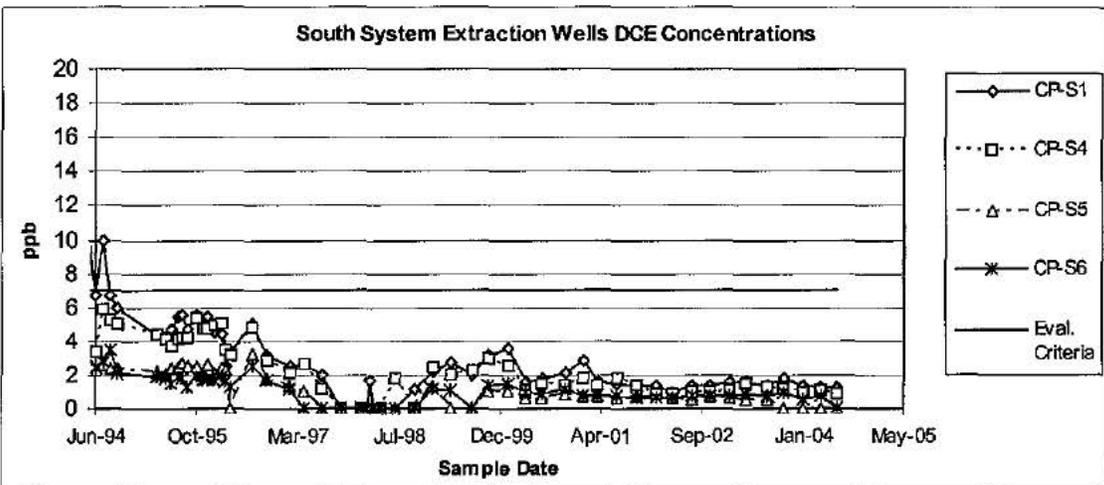
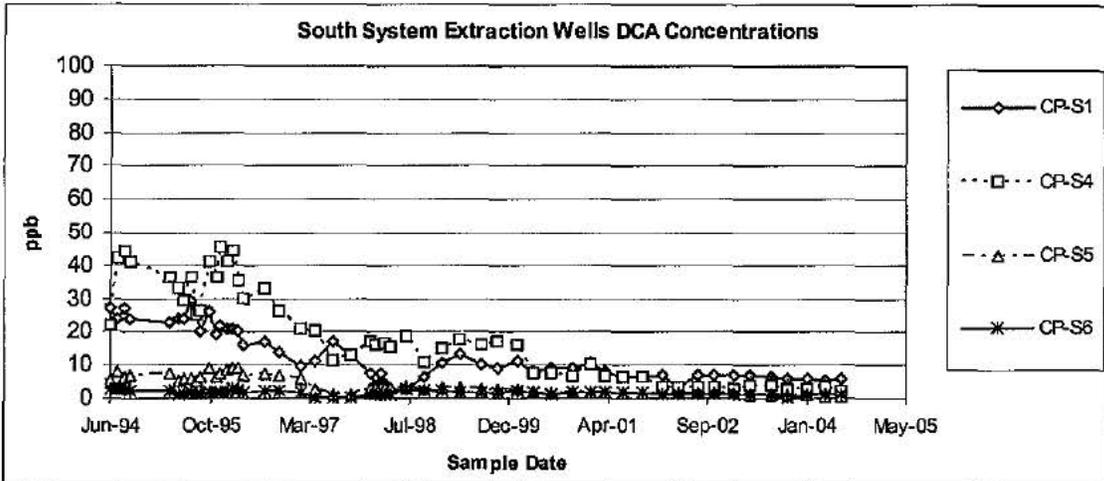
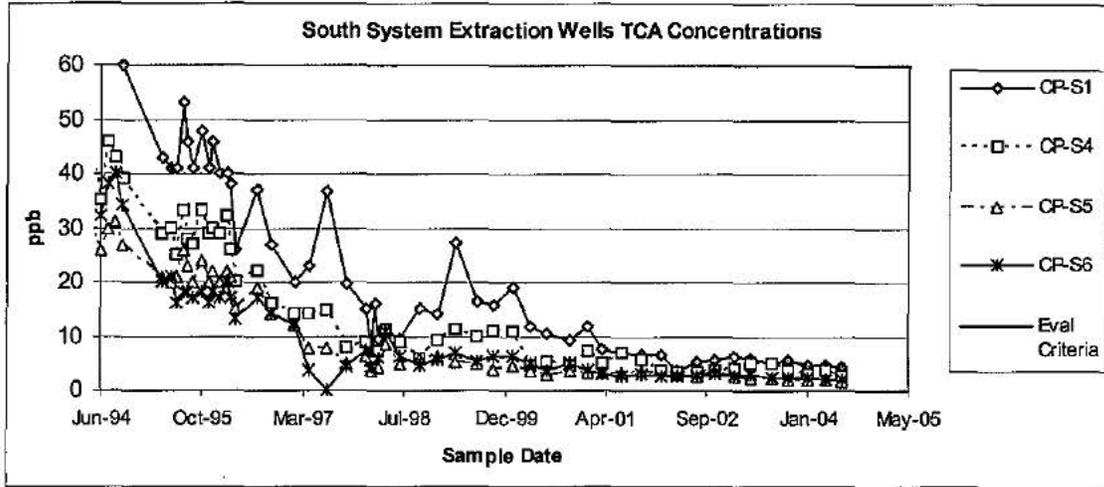


Figure 2-8 South System Extraction Wells TCE, PCE and MC Concentrations

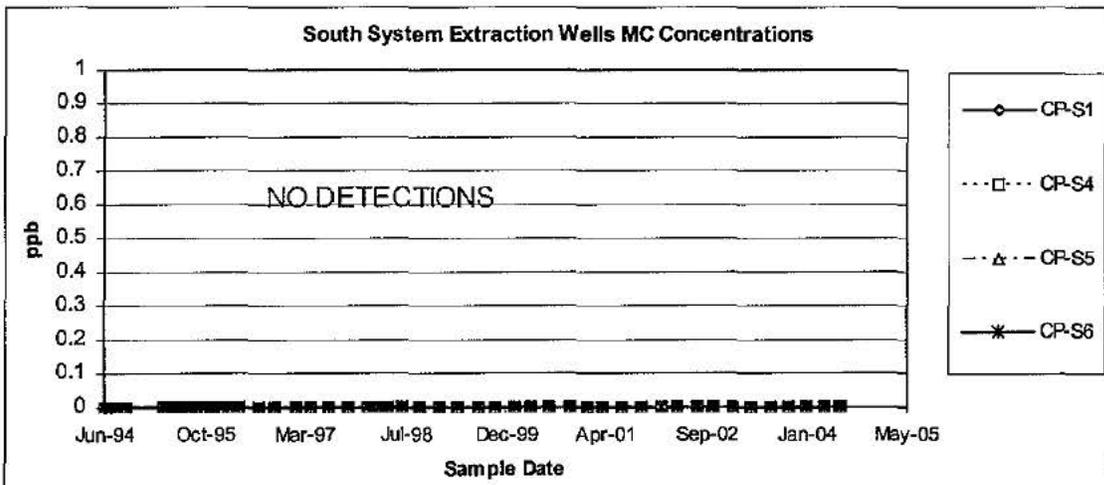
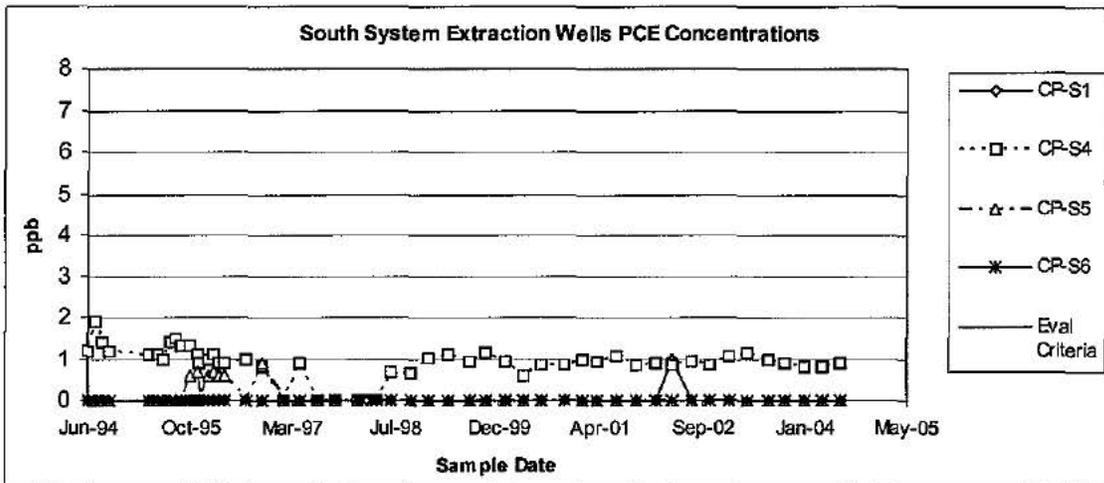
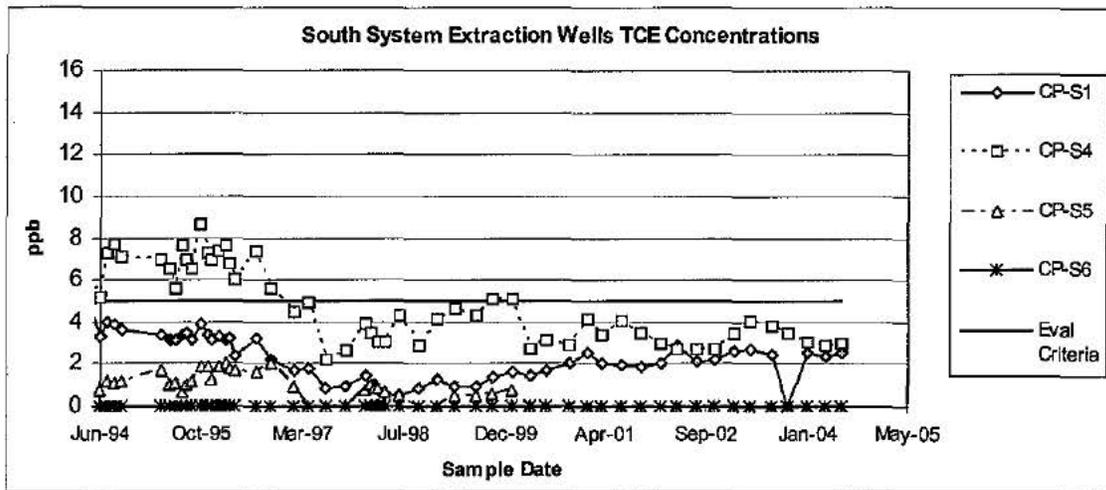
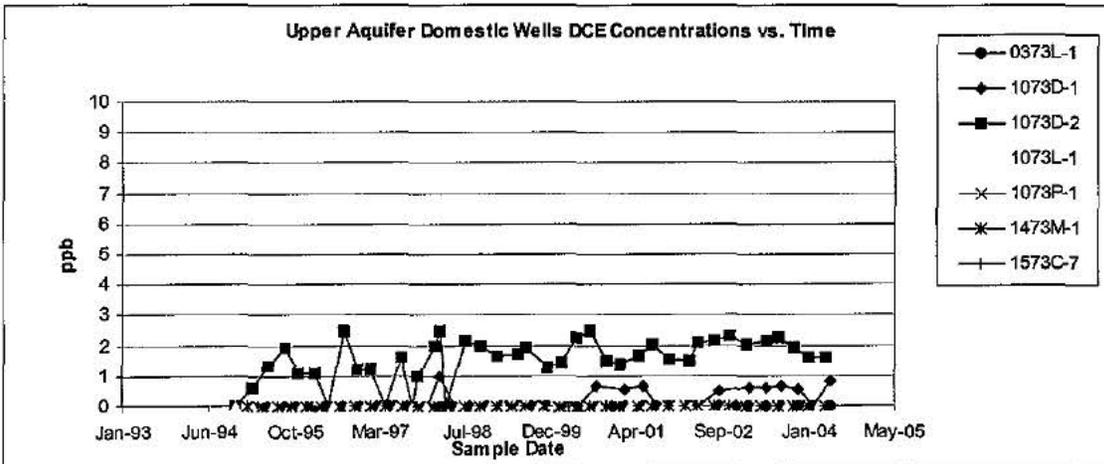
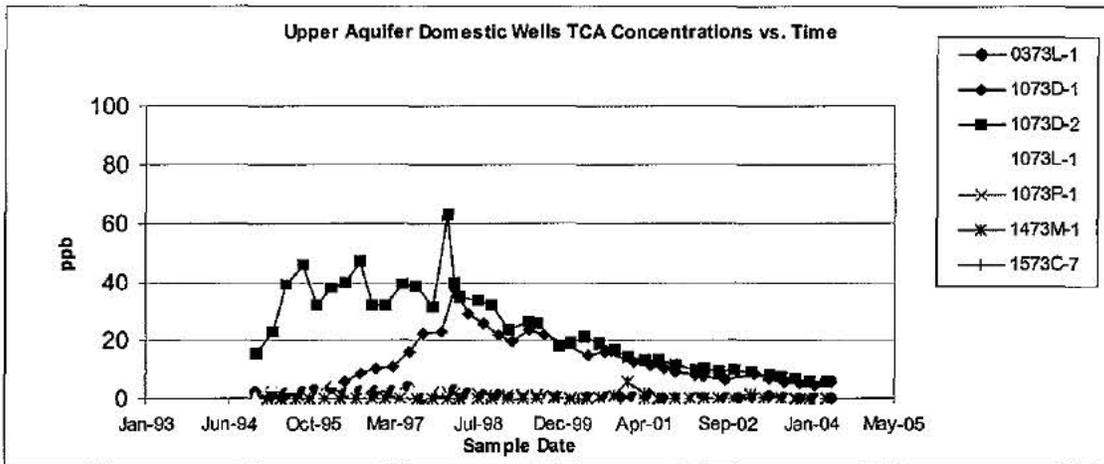
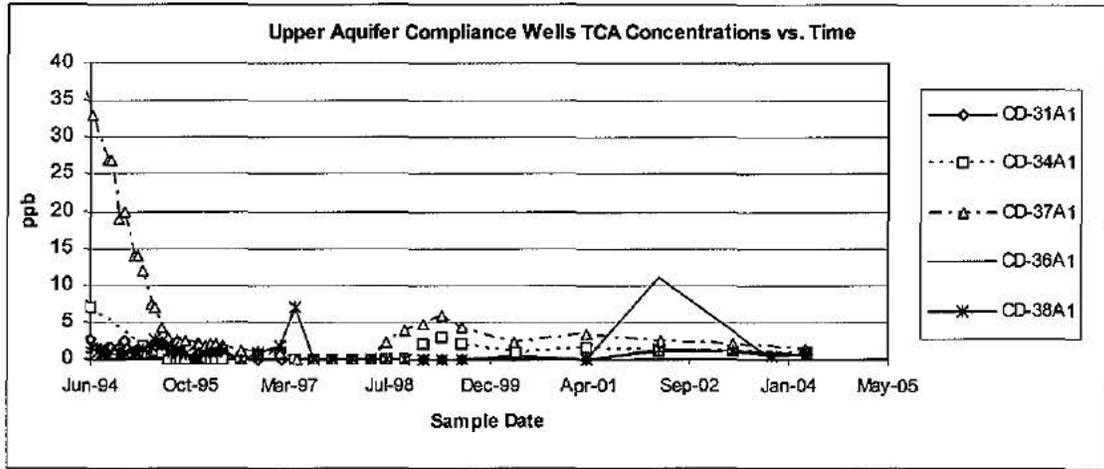
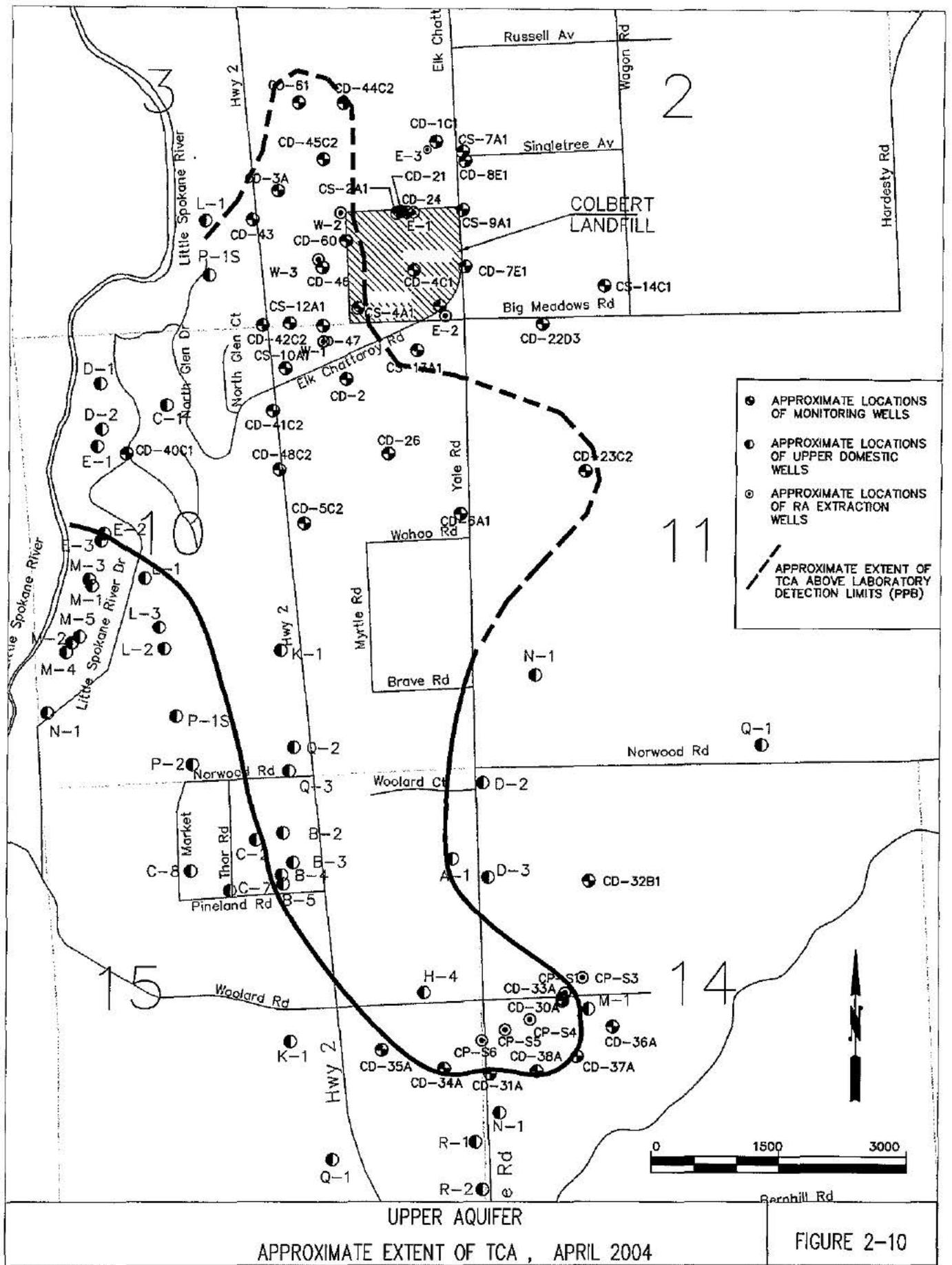


Figure 2-9 Upper Aquifer Compliance and Domestic Well Constituents





- APPROXIMATE LOCATIONS OF MONITORING WELLS
- APPROXIMATE LOCATIONS OF UPPER DOMESTIC WELLS
- ⊙ APPROXIMATE LOCATIONS OF RA EXTRACTION WELLS
- - - APPROXIMATE EXTENT OF TCA ABOVE LABORATORY DETECTION LIMITS (PPB)

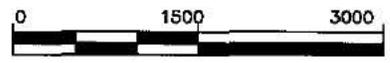


Figure 2-11 West System Extraction Wells TCA, DCA and DCE Concentrations

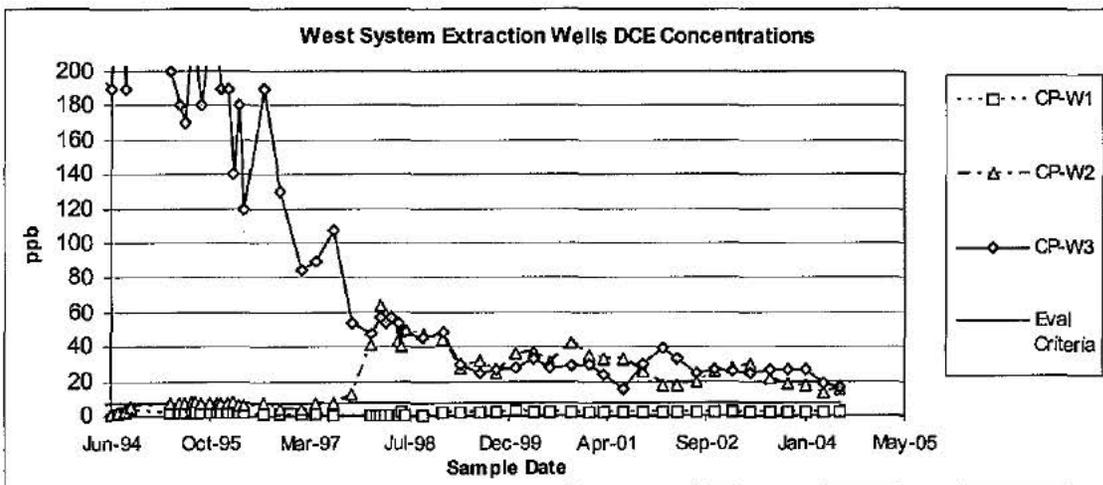
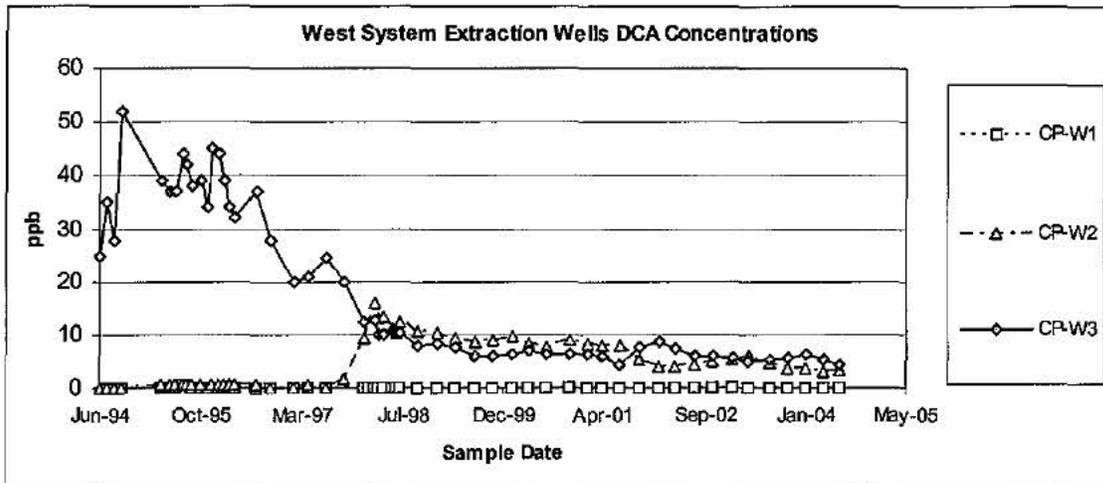
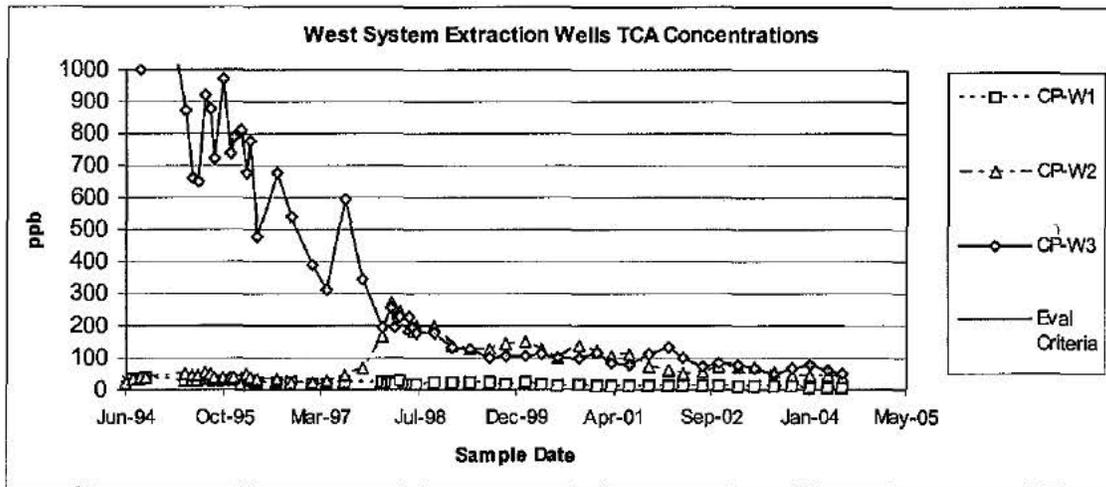


Figure 2-12 West System Extraction Wells TCE, PCE and MC Concentrations

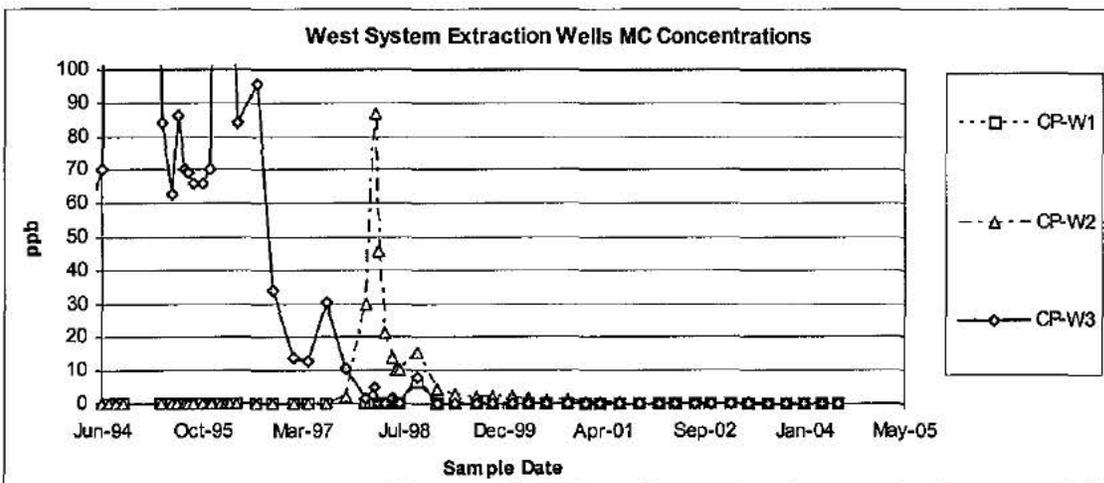
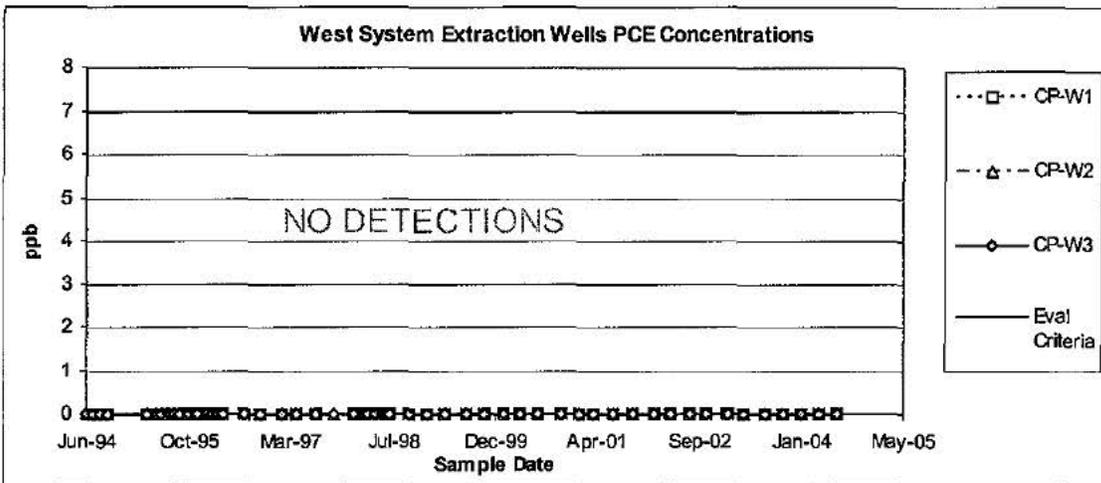
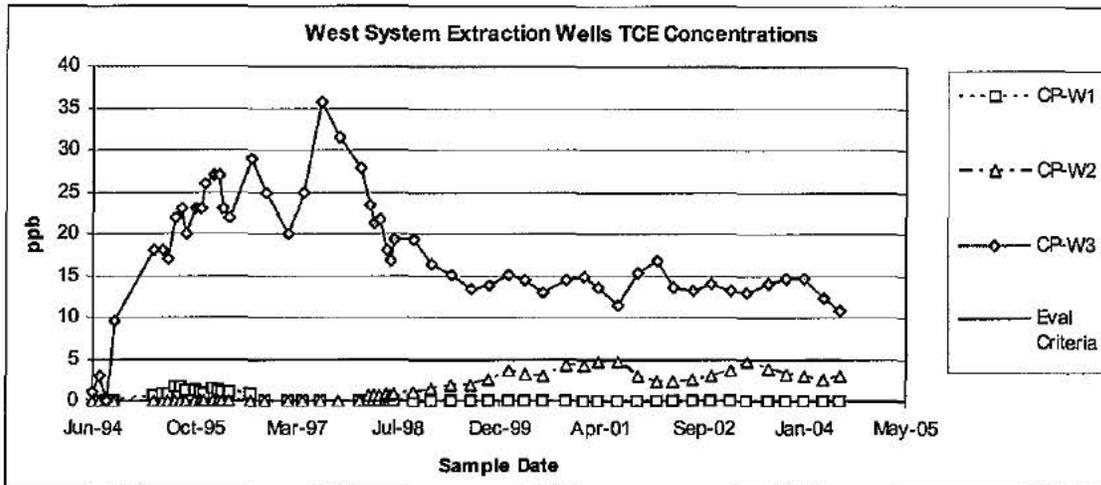


Figure 2-13 East System Extraction Wells TCA, DCA and DCE Concentrations

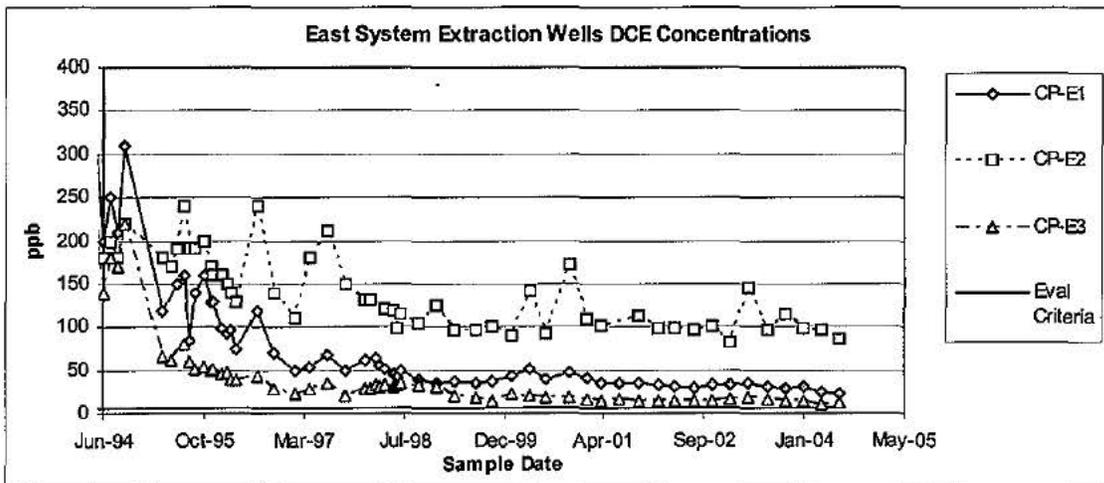
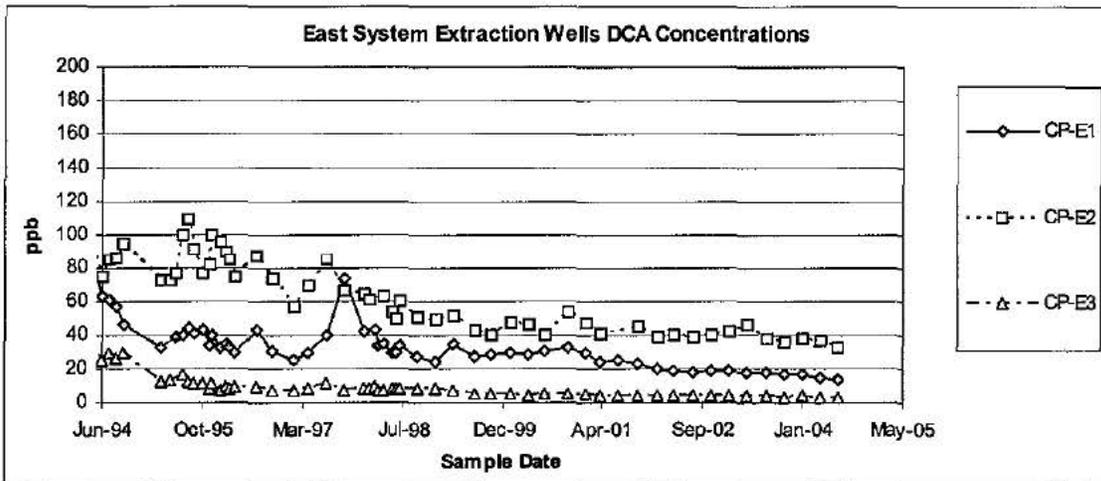
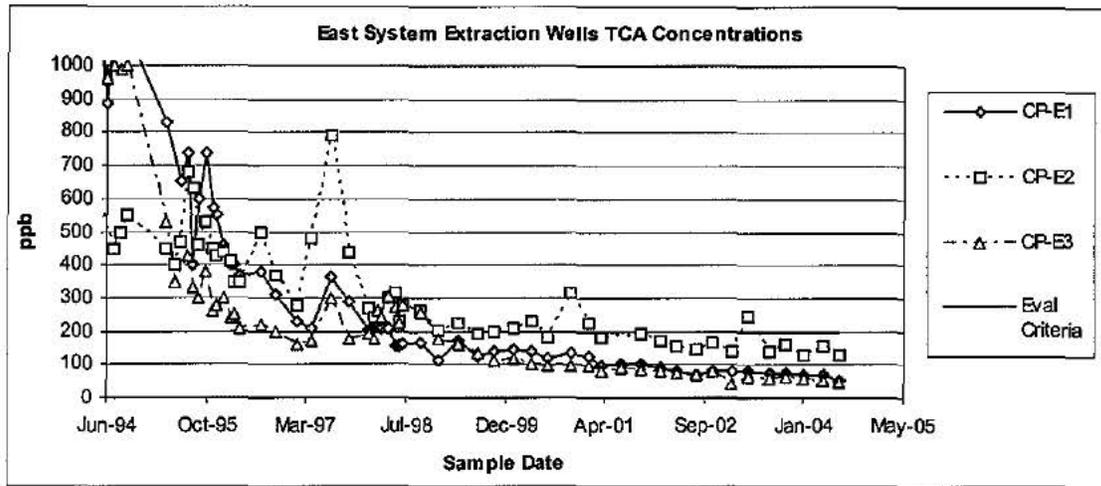


Figure 2-14 East System Extraction Wells TCE, PCE and MC Concentrations

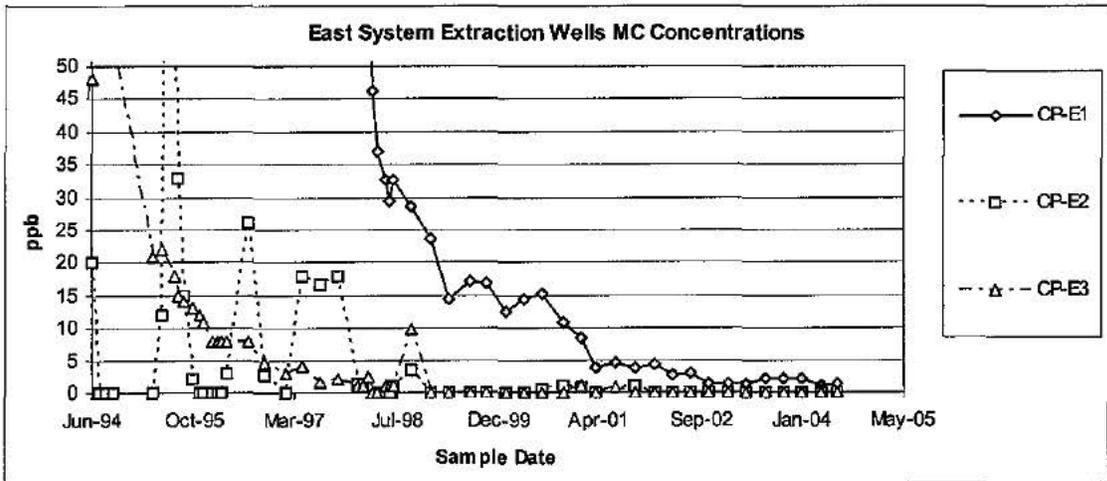
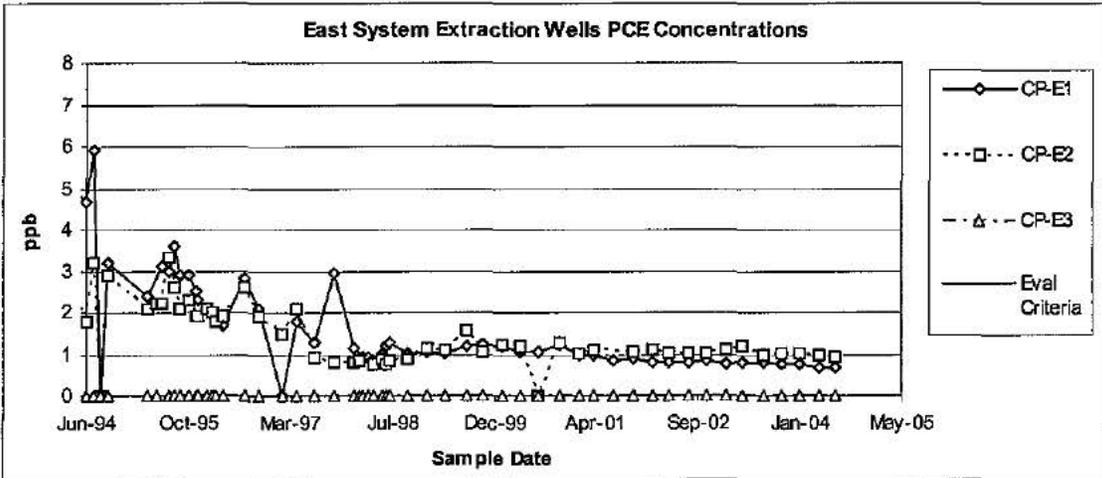
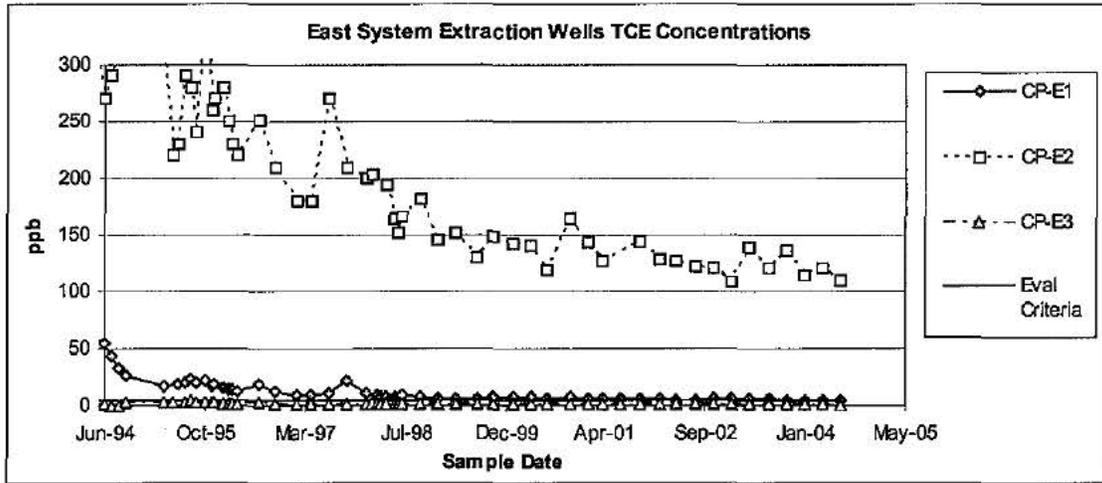


Figure 2-15 Lower Aquifer Compliance and Domestic Well Analyte Concentrations

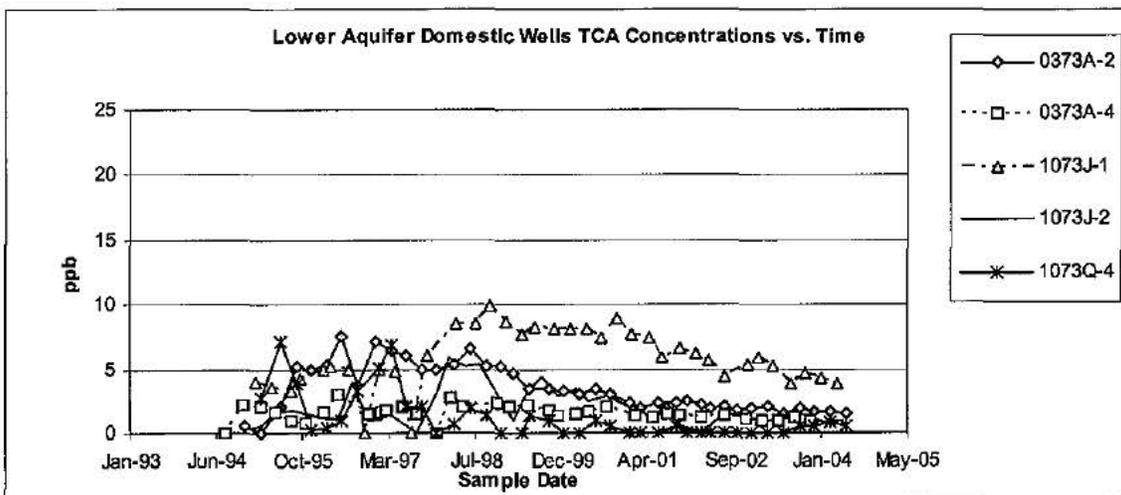
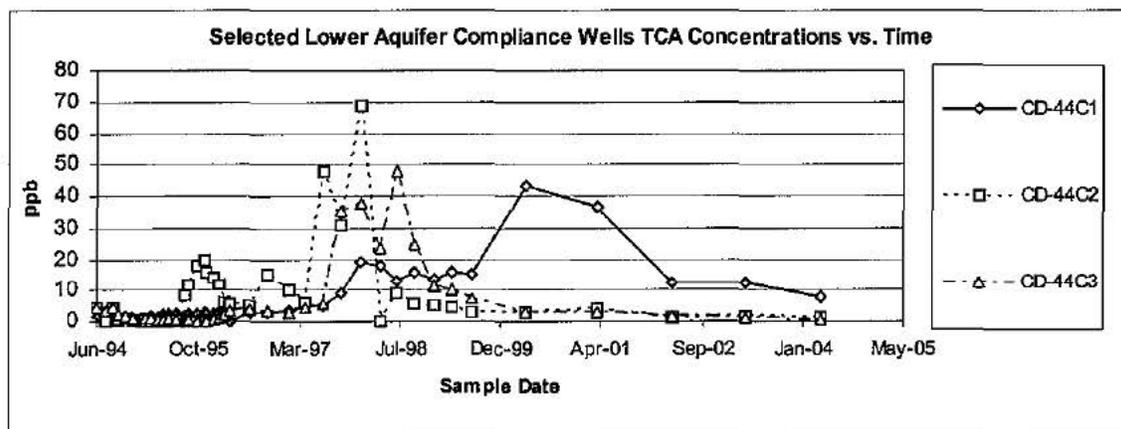
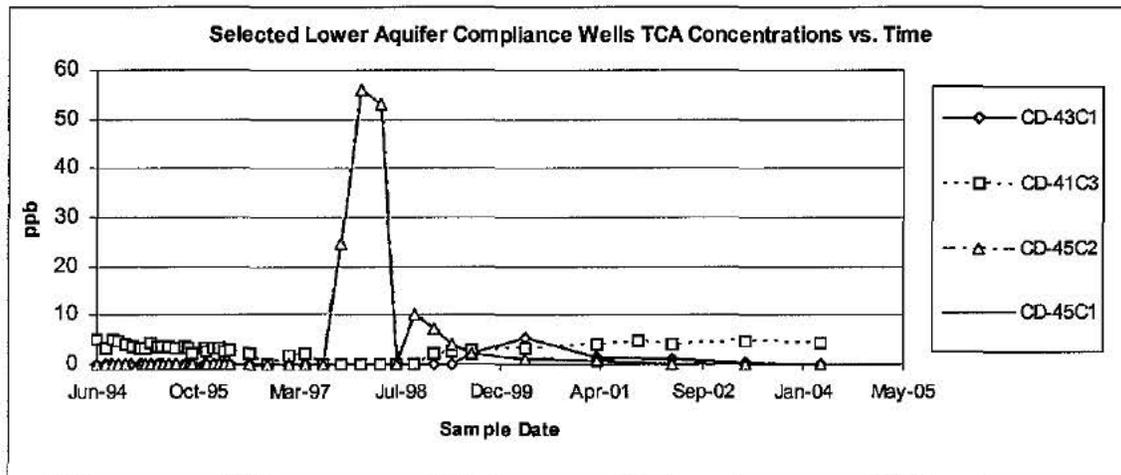


Figure 2-17 Influent and Effluent Analyte Concentrations

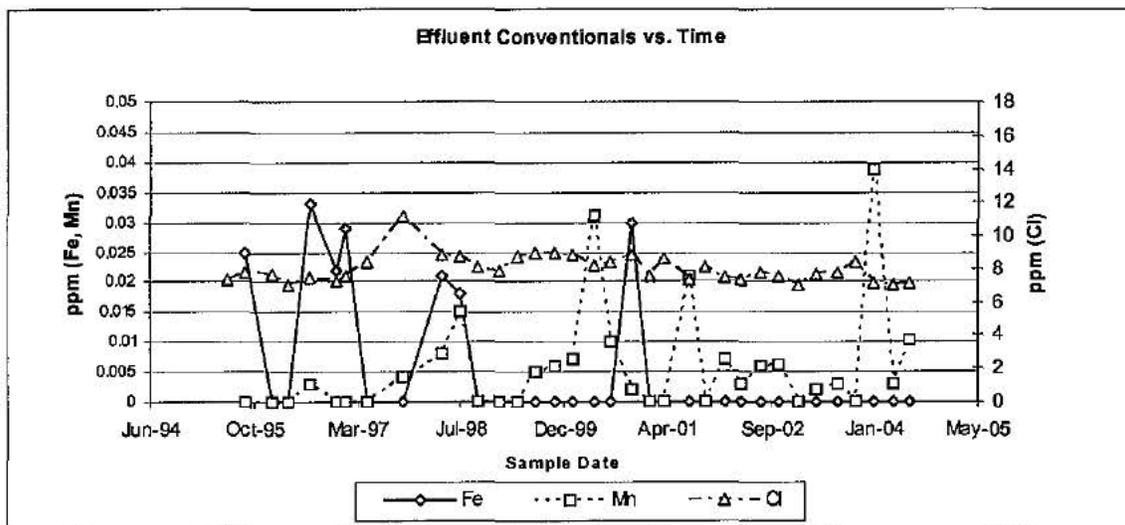
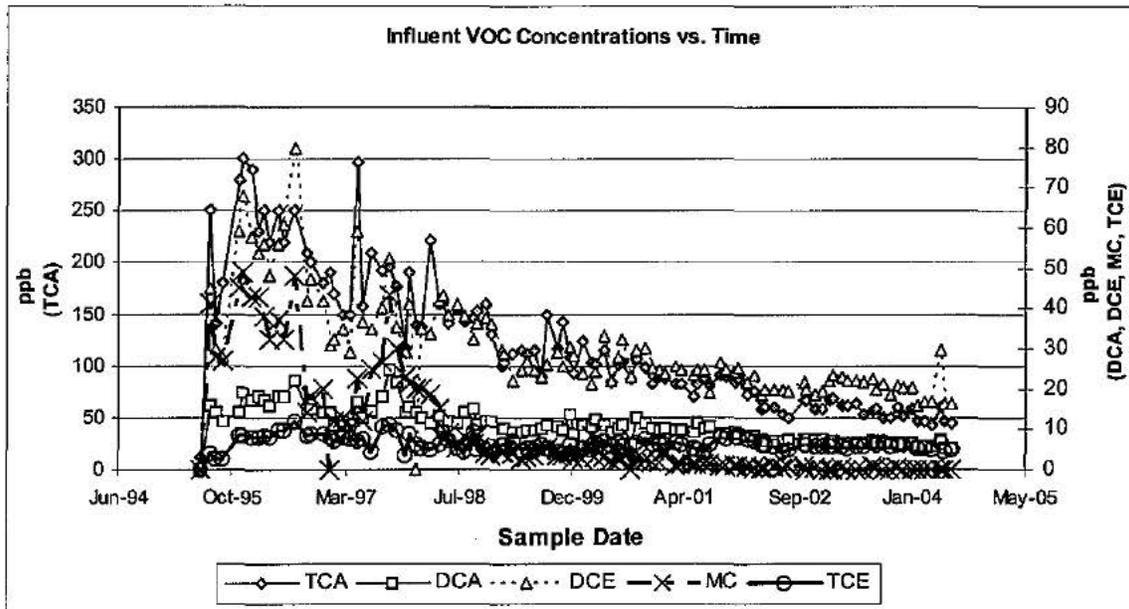


Figure 2-18 Facility Flow, Mass and Concentrations

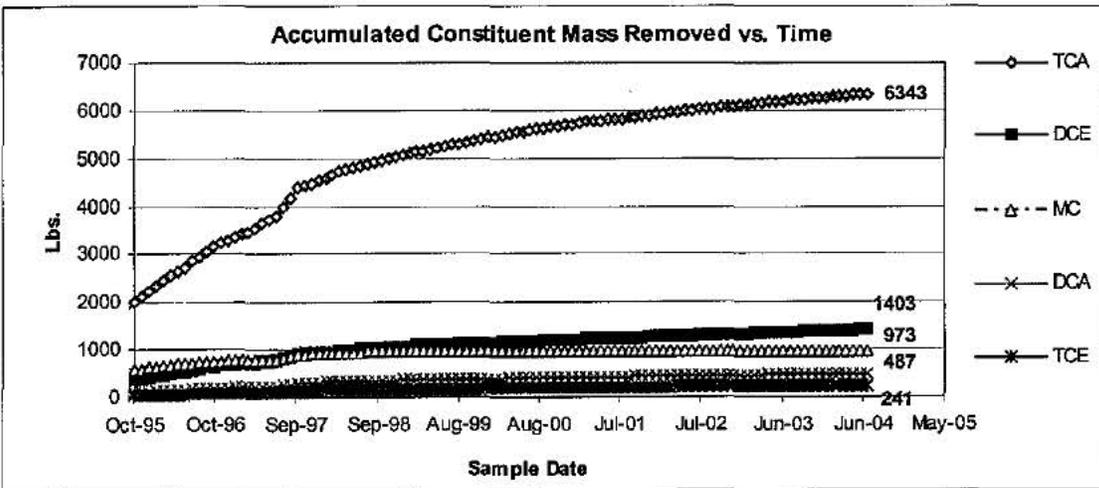
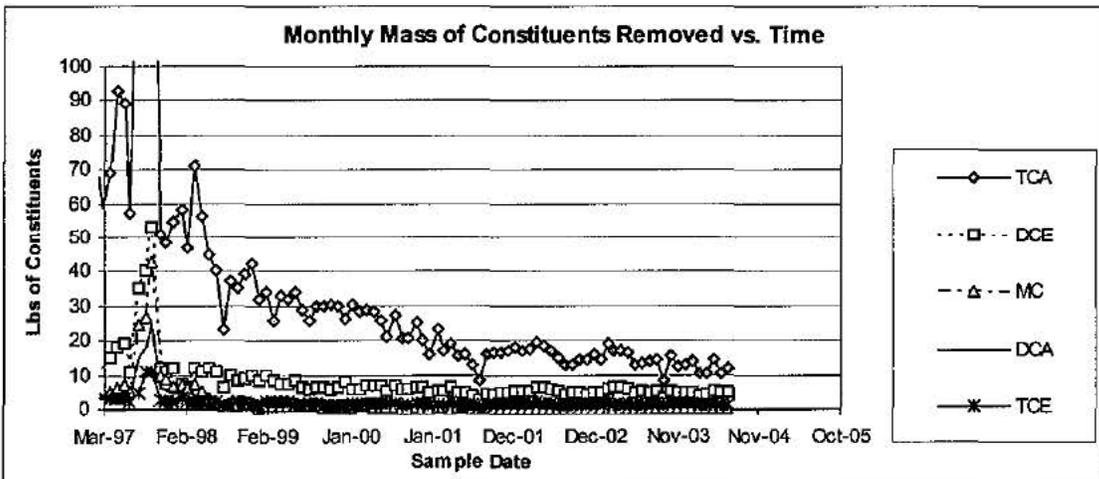
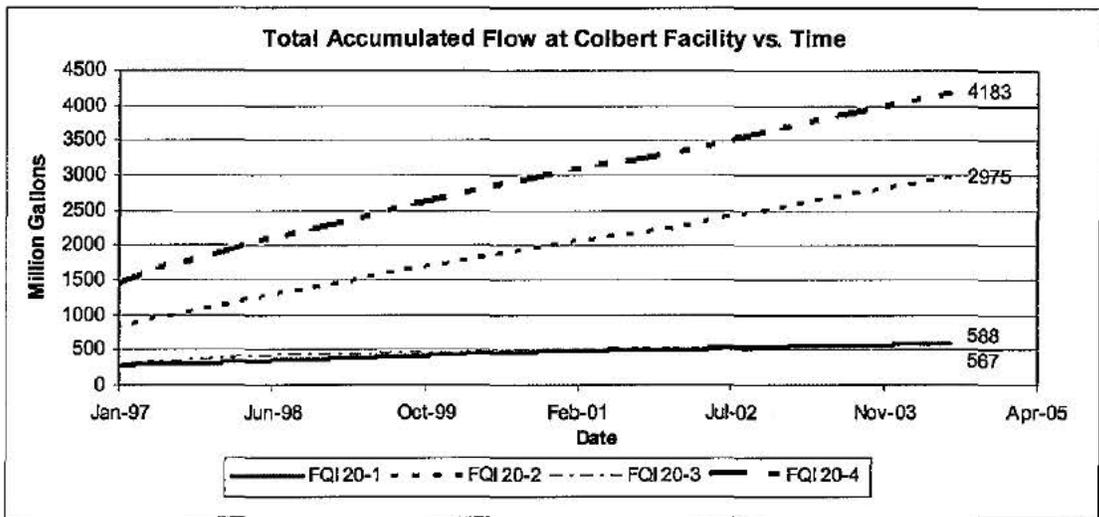
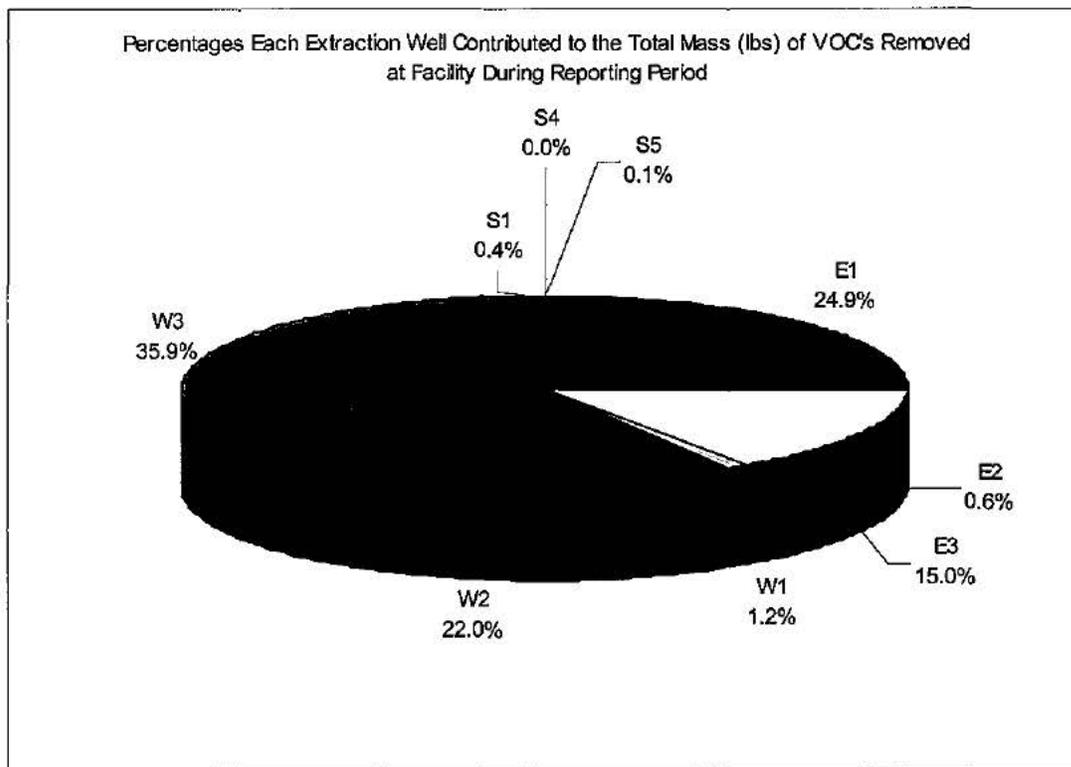
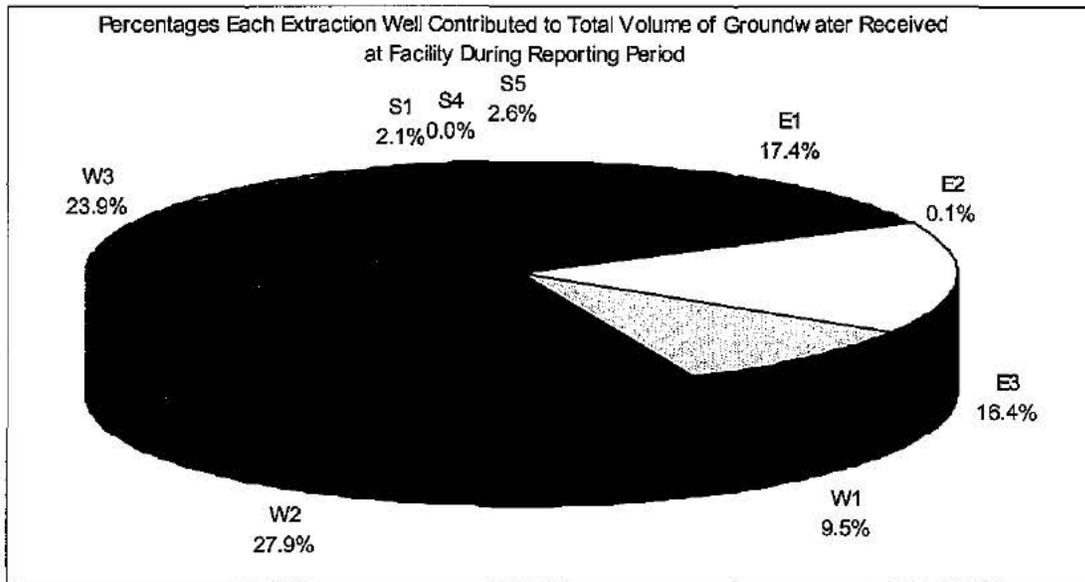


Figure 2-19 Volumes and Mass Removed from Extraction Wells



2.2 PERFORMANCE ASSESSMENT

2.2.1 UPPER AQUIFER

All south system extraction wells met operational and adjustment control criteria. All wells sampled in the upper aquifer were well below the applicable criteria for the constituents of concern.

The general direction of groundwater flow in the upper aquifer is south. Groundwater elevation contours and flow lines indicate capture is being achieved in the upper aquifer in the area of the active extraction wells.

2.2.2 LOWER AQUIFER

Lower aquifer compliance monitoring wells and domestic wells continue to exhibit constituent of concern concentrations below performance criteria. Groundwater elevation contours and flow lines indicate capture is being achieved in the lower aquifer in the area surrounding the landfill.

2.2.3 ACTIONS TAKEN

Per conditions set forth in Appendix B, page V-7, the south system extraction wells were placed on standby on June 2, 2004. The wells will be sampled on a quarterly basis. If any adjustment control criteria are exceeded, or an increasing trend is identified that may lead to an exceedance, the well(s) will be reactivated.

No other actions or adjustments were made during this reporting period as a result from performance data.

3.1 OPERATIONAL DATA

3.1.1 FACILITY

The operational data summary for the facility can be found in Table 3-1. The facility averaged 21.6 hours per day on line for the reporting period. Volume of water treated through the system was approximately 85.1 million gallons, a 7.4 percent decrease from last quarter. The air to water ratio averaged 96.8 for the quarter. Approximately 528 gallons of scale prevention chemical was used during this quarter at a rate of 23.8 mis/1000 gallons. Flow error percentages for each influent trunk line were less than 3%. Daily data collection time averaged 99.00 percent.

3.1.2 WELLS

The operational data summary for the extraction wells is presented in Table 3-2. Time on line for most extraction wells was greater than 80 percent. The flow rate at CP-W2 was decreased after LIT calibration was performed in mid-April. Flow rates in all other extraction wells were consistent during this reporting period (Figure 3-2). Extraction well specific capacities are presented in Figure 3-2.

3.2 OPERATIONAL ASSESSMENT, PROBLEMS AND ADJUSTMENTS

3.2.1 FACILITY

In general, facility operations were normal for the second quarter 2004. The following minor problems or adjustments were present:

- The facility was shutdown from May 10 through May 13 due to scheduled annual maintenance activities.
- There was a system shutdown on May 20 through May 23 due to a series of electrical storms and power outages.

3.2.2 WELLS

The following problems and/or adjustments were present during this reporting period:

- On May 17 the flow setpoints in CP-E1 and CP-W2 were increased by the operator. Data from these wells indicate a higher removal efficiency and flow was increased for contaminant removal optimization.
- CP-E2 faulted on June 15 due to a power fault.

Table 3-1 Colbert Treatment Facility Operational Data Sheet

Reporting Period: 2nd Quarter 2004

INFLUENT SYSTEM (20)				
Flow Rate (gpm)	FI 20-1	FI 20-2	FI 20-3	FI 20-4
Min	0.0	0.0	0.0	0.0
Max	69.8	692.0	55.1	814.0
Avg	62.5	555.7	31.2	649.4
Flow Rate (MGD)				
Min	0.0	0.0	0.0	0.0
Max	0.1	1.0	0.1	1.2
Avg	0.1	0.8	0.0	0.9
Accumulated Flow (kgal)				(MGD)
2nd Quarter 2004	8191.6	72814.2	4087.0	85.1
Change from last quarter (% Diff)	10.7	9.3	-31.9	7.4
Year to Date	15507.9	138890.4	9478.8	163.9
Flow Error %				
Min	-1.78	-1.53	-5.75	
Max	1.00	0.72	1.00	
Avg	0.09	0.14	-0.27	
Pressure	PT 20-1			
Min	3.1			
max	27.9			
Avg	26.4			

BYPASS SYSTEM (21)	
Flow Rate (gpm)	FE 21-1
Min	0.0
Max	0.0
Avg	0.0
Flow Rate (MGD)	
Min	0.0
Max	0.0
Avg	0.0
Accumulated Flow (kgal)	
This Quarter	0.0
Change from last quarter (% Diff)	0.0
Year to Date	0.0
Flow Error %	
Min	0.0
Max	0.0
Avg	0.0
Pressure	PT 21-1
Min	1.0
max	2.1
Avg	1.6

SUMP SYSTEM (28)	Pumps		Exhaust fan	
	Batch P28-1	Airstripper P28-2	Building P28-3	EF28-1
Time On-Line				
Avg hours per day	0	0	0	0.9
Quarterly total	43.7	0.8	2.3	1.9
Year to Date	77.8	3.8	10.1	151.3
Temperature (deg. F)	TT28-1	TT28-2		
Min	41.7	46.2		
Max	65.9	64.6		
Avg	52.0	53.2		

SCALE CHEMICAL SYSTEM (22)	Feed pumps	
	P22-1	P22-2
Time On-Line		
Avg hours per day	13.0	10.1
Quarterly total	1182.9	922.2
Year to Date	3161.2	967.8
Level (ft)	Tank T-1	
Min	2.3	
Max	4.8	
Avg	4.0	
Avg Feed Rate	23.8	(mls/kgal)
Volume Used	528	(gallons)

Colbert Treatment Facility Operational Data Sheet (continued)

AIRSTRIPPING SYSTEM (24)								
Pressure		Filter	Fan	Tower		pH	pH 1	pH 2
		DP24-1	PIT24-2	PIT24-2			AE24-1	AE24-2
	Min	0.0	0.0	-0.1		Min	7.04	7.40
	Max	0.1	0.9	0.7		Max	8.42	9.56
	Avg	0.0	0.7	0.4		Avg	7.56	7.80
Fan		Fan Flow (cfm)	Air/Water	VFD Speed (%)	Time Online (hrs)	ClearWell	Temp (F)	Level (ft)
	Min	7447.9	79.6	30.7	0.0			
	Max	10057.0	115.2	38.2	24.0	Min	47.7	0.7
	Avg	8714.9	96.8	34.1	21.6	Max	68.4	1.2
Accum Flow (MCF)					Avg	52.2	1.0	
this quarter	14213.0			1962.5				
Year to Date	15334.0			3905.4				

Data Collection Time	(% Day)
Min	56.94
Max	100.00
Avg	99.00

Table 3-2 Colbert Treatment Facility Extraction Wells Operational Data Sheet

	South System				West System			East System		
	CP-S1	CP-S4	CP-S5	CP-S6	CP-W1	CP-W2	CP-W3	CP-E1	CP-E2	CP-E3
Water Level Above Pump (ft)										
Min	7.00	3.55	8.10	9.28	83.49	37.76	43.30	21.58	2.18	17.13
Max	15.90	10.20	10.40	9.50	85.90	47.03	46.49	33.00	10.66	22.78
Avg	11.20	7.11	8.99	9.40	84.08	40.70	44.03	23.73	5.51	18.21
Groundwater Elevation										
Min	1751.66	1753.14	1758.65	1760.03	1666.58	1654.39	1666.09	1657.98	1688.10	1662.64
Max	1760.56	1759.79	1760.95	1760.25	1668.99	1663.66	1669.28	1669.40	1696.58	1668.29
Avg	1755.86	1756.70	1759.54	1760.15	1667.17	1657.33	1666.82	1660.13	1691.43	1663.72
Flow (gpm)										
Min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	25.00	0.00	28.83	0.95	69.40	258.70	173.64	144.18	2.00	119.01
Avg	13.90	0.00	16.73	0.01	62.23	182.17	156.15	113.81	0.92	107.12
Accumulated Flow (kgal)										
This Quarter	1.82	0.00	2.19	0.00	8.15	23.87	20.46	14.91	0.12	14.04
Diff from last quarter (%)	-50.9	-12.0	0.0	0.0	9.4	-16.4	21.0	18.5	40.0	-8.9
Year To Date										
Total	11.40	2.32	3.36	0.00	48.78	62.56	44.95	46.54	0.46	51.65
Specific Capacity										
Min	-9.41	0.00	-22.4	0.00	0.0	0.00	-3201	0	0.00	0.00
Max	8.18	0.00	162.00	3.40	4299.99	25.40	142.25	590	0.08	61.68
Avg	1.86	0.00	14.06	0.04	92.24	15.10	32.04	23.60	0.04	19.28
Pressure										
Min	7.14	4.92	4.00	0.00	5.00	3.00	5.00	0.00	0.00	0.00
Max	34.25	37.99	31.19	0.00	34.92	42.09	39.01	35.99	27.00	31.00
Avg	32.42	33.22	29.10	0.00	32.52	35.80	34.49	29.94	23.61	24.67
VFD Speed (%)										
Min	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max	55.00	64.00	78.10	3.26	84.00	100.00	83.00	100.00	70.22	81.00
Avg	30.58	34.07	46.40	0.04	75.36	82.39	74.16	84.92	57.94	72.39
Time On-Line										
% of quarter	52.84	50.04	56.77	0.00	86.06	86.29	86.30	86.23	80.29	86.36

Figure 3-1 Extraction Well Flow Rates

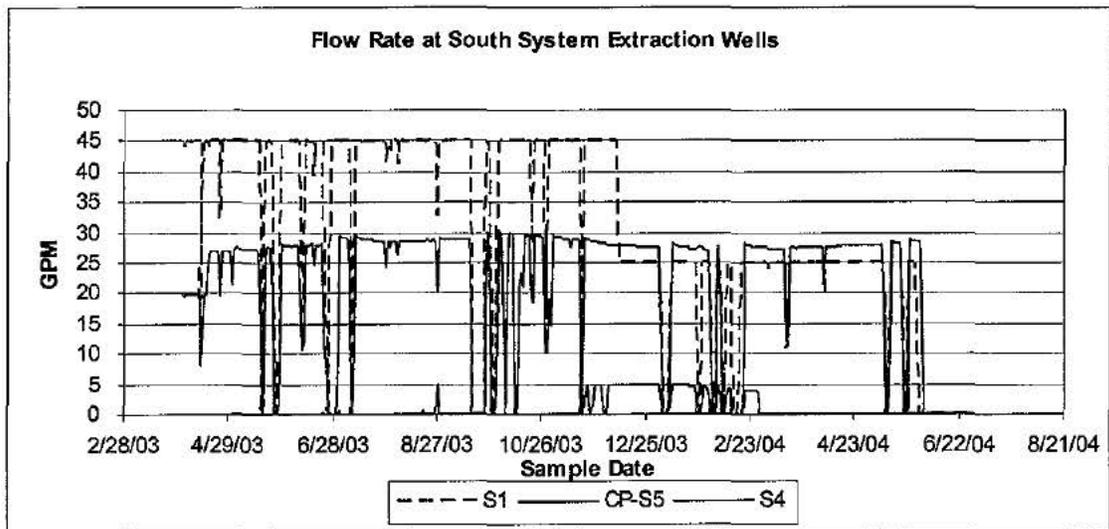
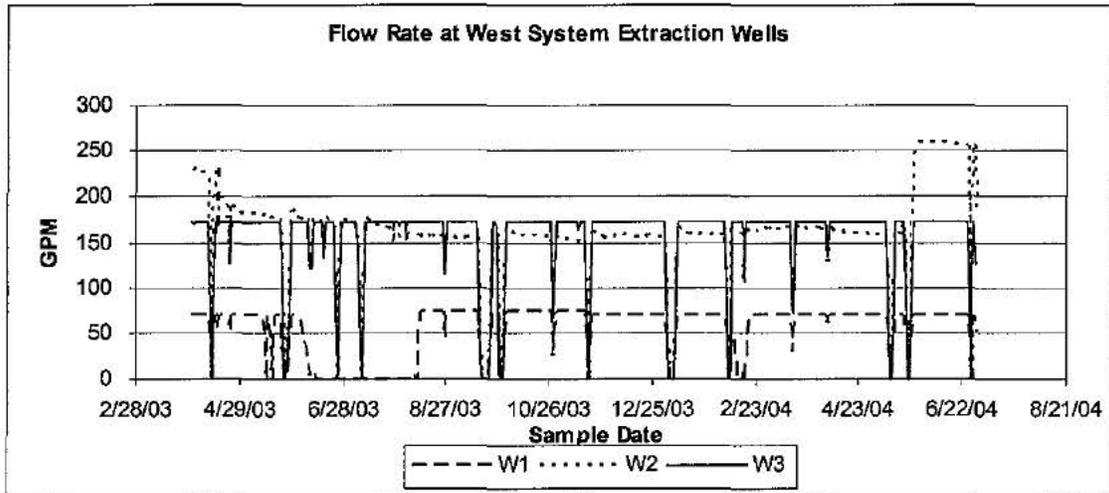
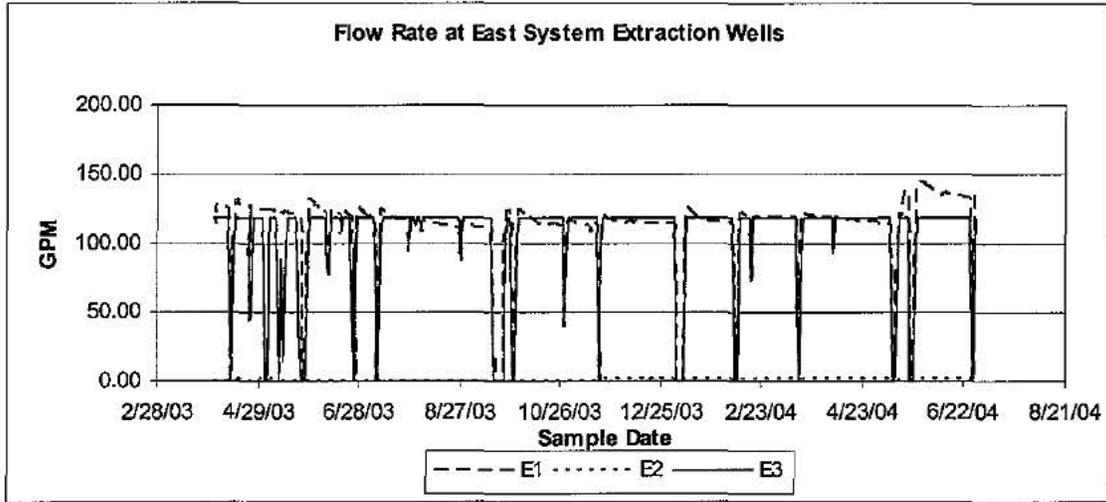
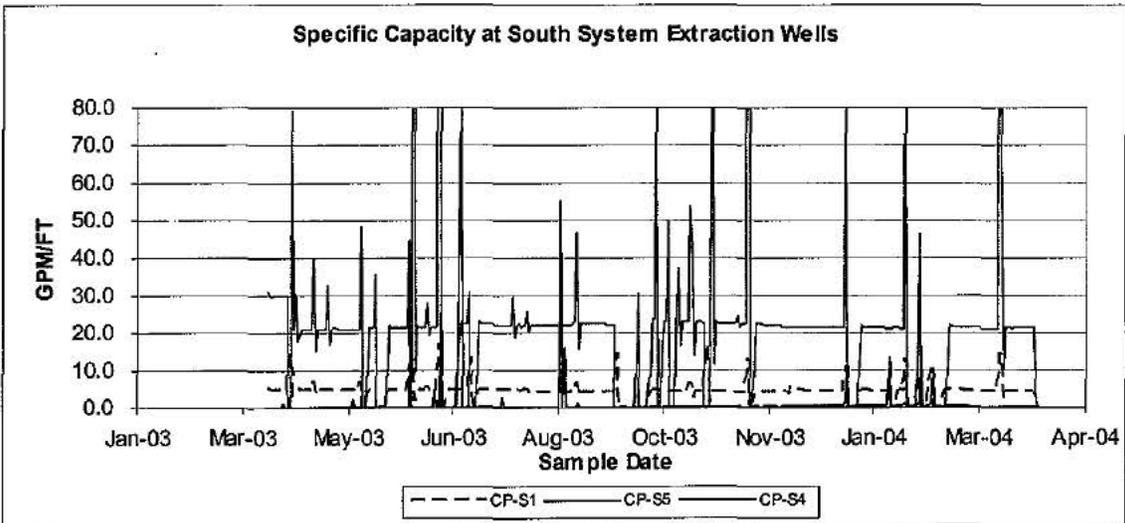
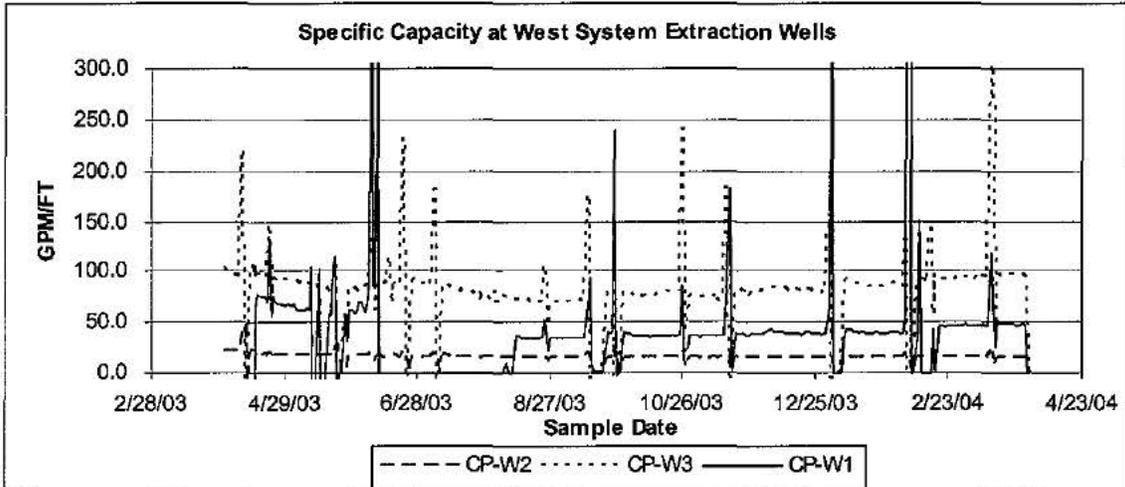
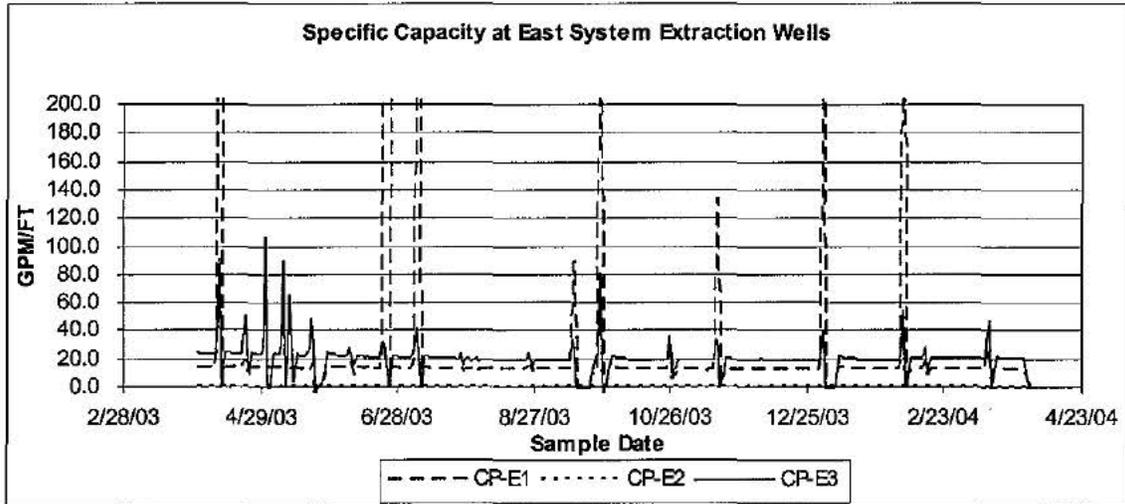


Figure 3-2 Extraction Well Specific Capacities



4.1 MFS Sampling Locations

Upper aquifer locations designated in the MFS groundwater monitoring program were sampled during the second quarter 2004. Lower aquifer locations, as outlined in the MFS Groundwater Monitoring Plan (Landau Assoc., 1996), require no additional monitoring after the 2 year monitoring period, which ended in January 1999. Hydraulic data for the upper aquifer MFS monitoring wells has been presented in section 2.1 of this report. MFS monitoring well field parameters were previously shown in Table 2-1.

4.2 Chemical Data

All analyte detections for the reporting period, including MFS monitoring wells, were previously shown in Table 2-3. Concentrations of analytes tested for under MFS monitoring were consistent with previous results (see Figure 4-1 through Figure 4-3). Monitoring well CS-04A1, located in the landfill, had the highest levels of chloride, nitrate, COD, manganese, and sulfate. CD-03A1 had the highest Zn concentration at 0.009 mg/L. TCA concentrations were highest in CD-61A1 and indicate a decreasing trend since the RA cover system was installed in July 1998.

4.3 Exceedances

Monitoring well CS-04A1 had a manganese concentration (0.71 mg/L) which exceeded the MCL of 0.05 mg/L. No other locations sampled during this quarter exceeded any of the applicable criteria.

4.4 Statistical Data

The MFS Groundwater Monitoring Plan (Landau Assoc., 1996) requires three statistical methods be used when evaluating groundwater quality in accordance with MFS requirements. Time series plots were performed and discussed previously. Box plots were required after one year of data was collected. Box plots are presented in pages 4-A through 4-E.

The third statistical method required is the Mann-Whitney nonparametric significance test. The summary results for this test are presented in Table 4-1. Although lower aquifer locations are no longer scheduled for sampling, previous results are shown here as well. The purpose of this test is to determine whether changes in groundwater quality have occurred at the 0.05 level of significance between background and downgradient upper aquifer monitoring locations. A significant change (less than 0.05 level of significance) indicates that the groundwater may have been influenced by the landfill. Significance levels of two constituents (Fe and nitrate) in the upper aquifer suggest there is an impact on downgradient groundwater from the landfill. As discussed in the monitoring plan, a statistically significant difference may exist for some MFS parameters and since remedial action is currently in progress, no corrective actions will be considered unless there is an exceedance in a primary MCL. The only constituent that has a primary MCL is nitrate.

Figure 4-1 Upper Aquifer MFS Monitoring Wells Fe, Mn, and Zn Concentrations vs. Time

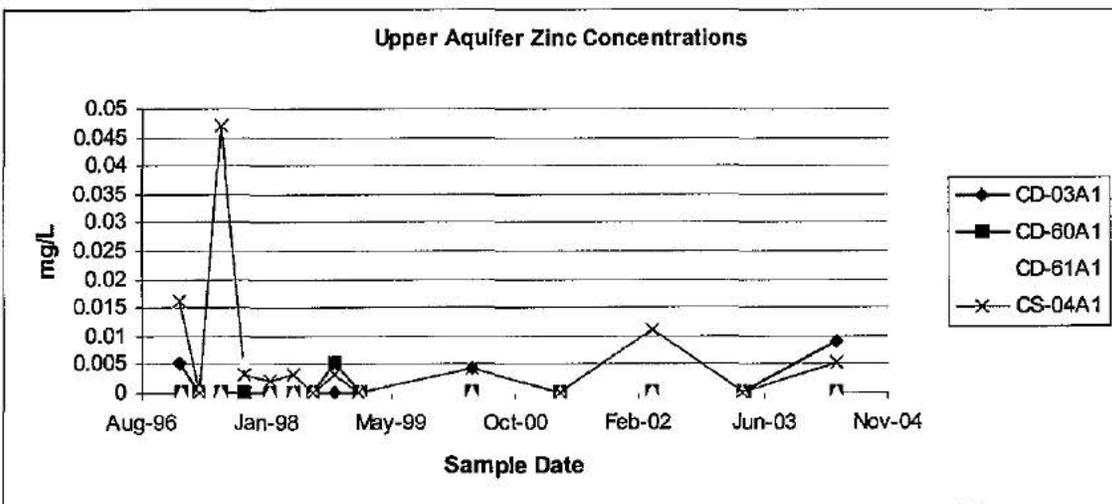
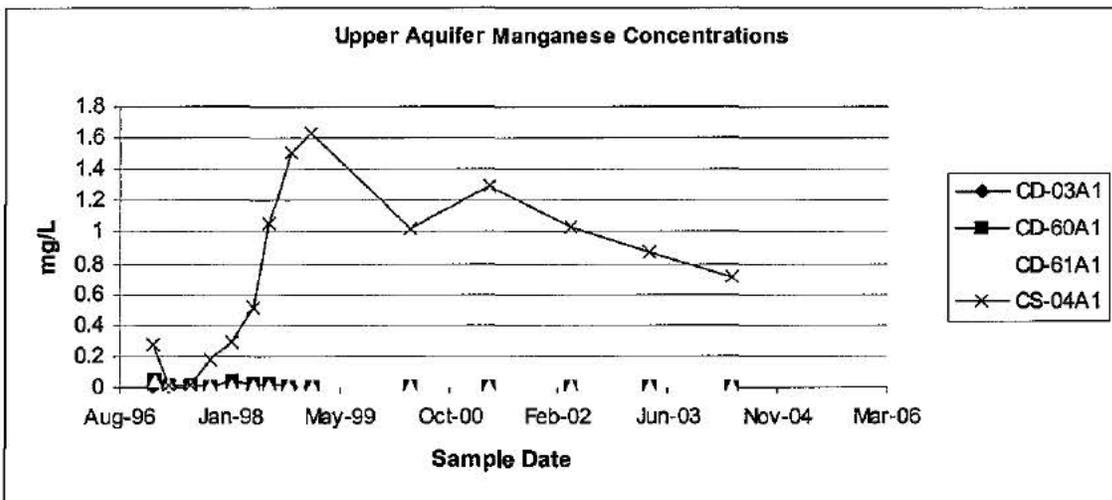
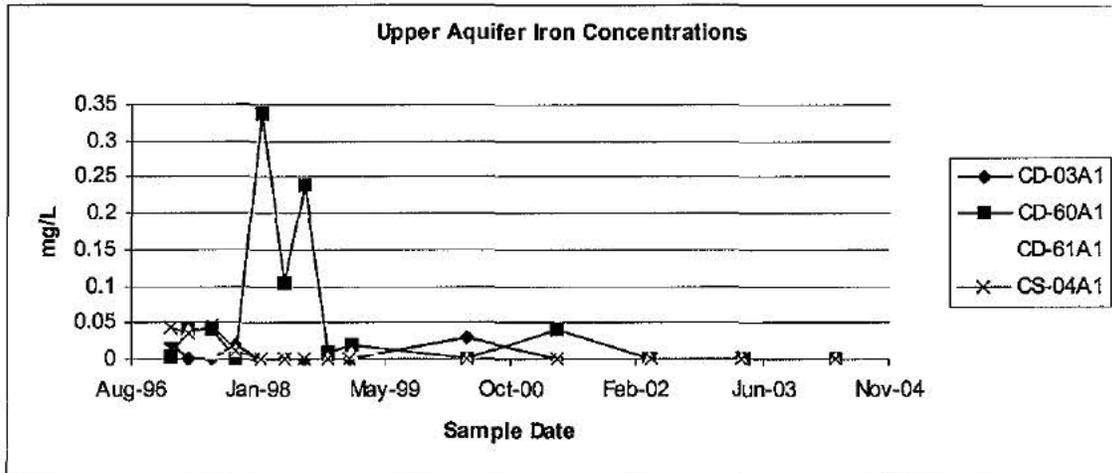


Figure 4-2 Upper Aquifer MFS Monitoring Wells SO₄, TOC and NO₃ Concentrations vs. Time

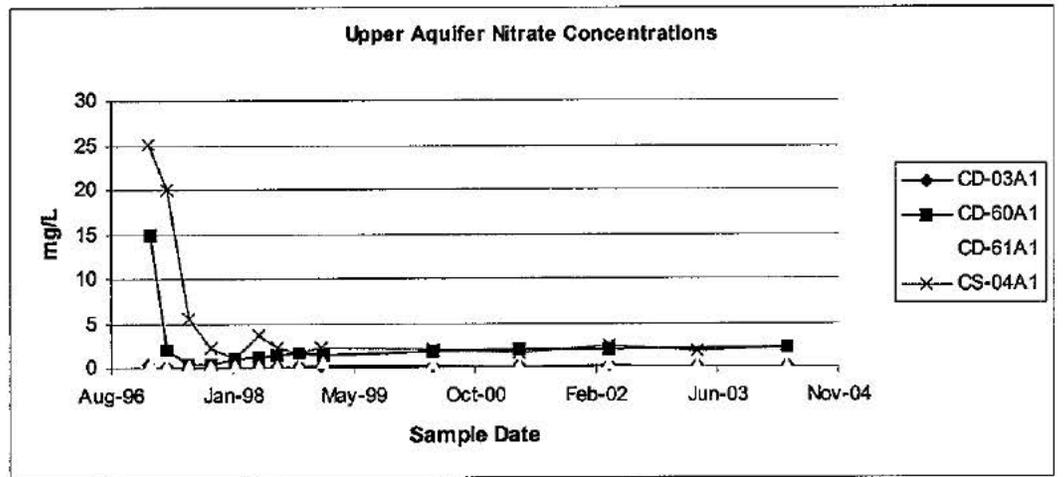
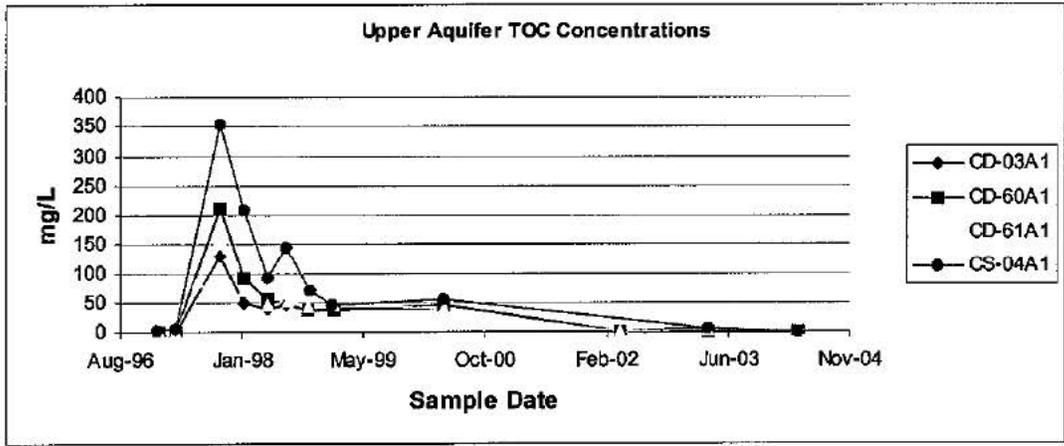
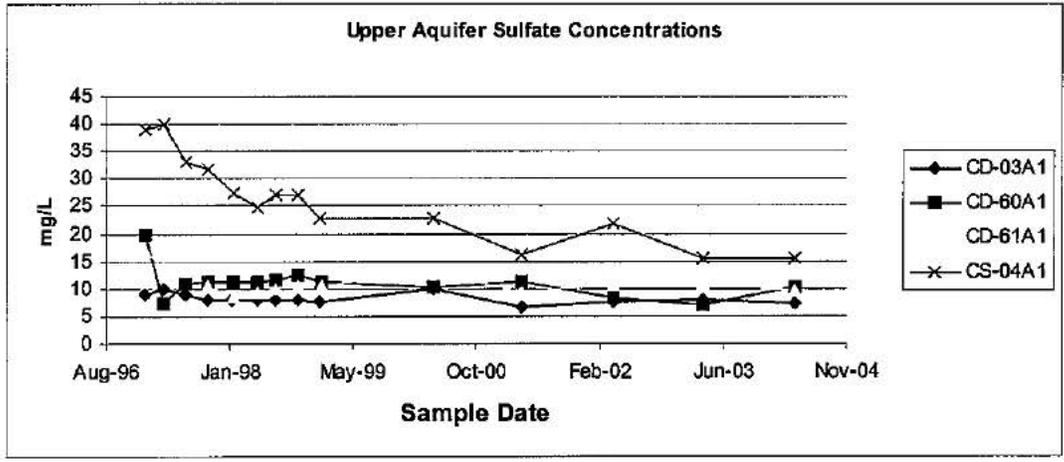
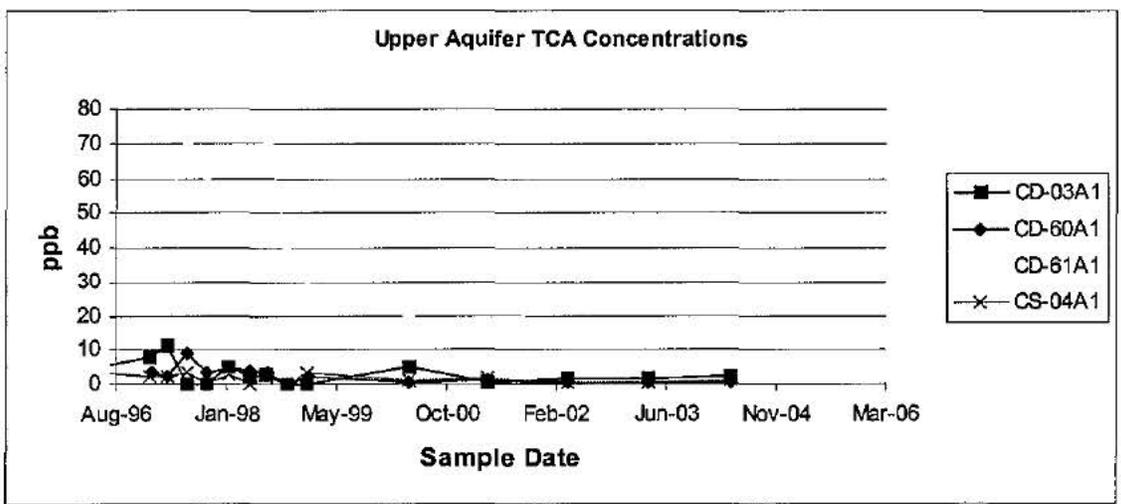
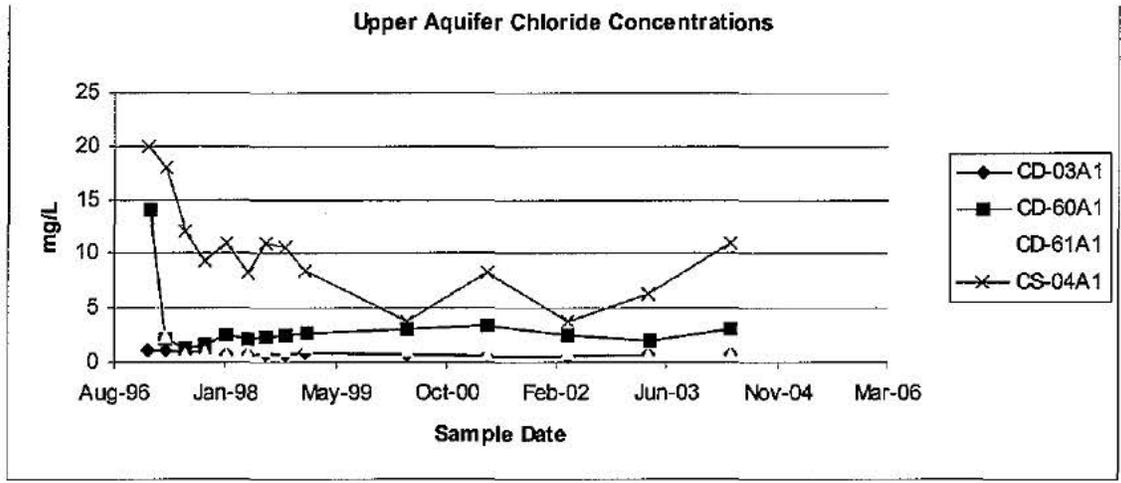


Figure 4-3 Upper Aquifer MFS Monitoring Wells Cl and TCA Concentrations vs. Time



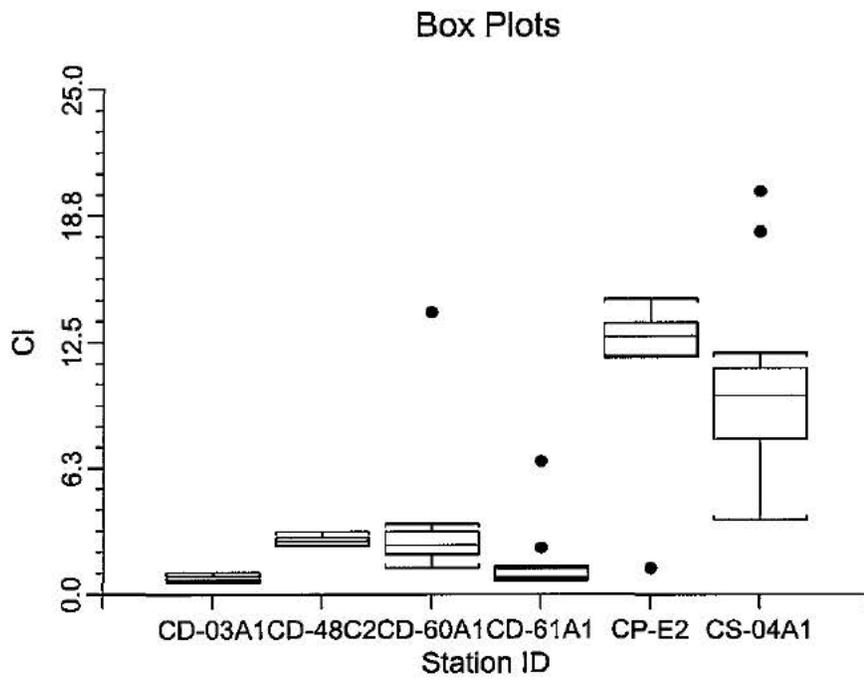
**Table 4-1 Summary Results for the Mann-Whitney Nonparametric Significance Test
(Second Quarter 2004)**

Constituent	Level of Significance (p)	
	Upper Aquifer	*Lower Aquifer (1999)
Chloride	0.13	0.006
Chemical Oxygen Demand	0.87	0.48
Iron	0.03	0.17
Manganese	0.41	0.86
Ammonia	0.49	0.42
Nitrite	1.07	1.13
Nitrate	0.02	0.08
Sulfate	0.54	0.0006
Total Organic Carbon	0.52	0.32
Zinc	0.13	0.06

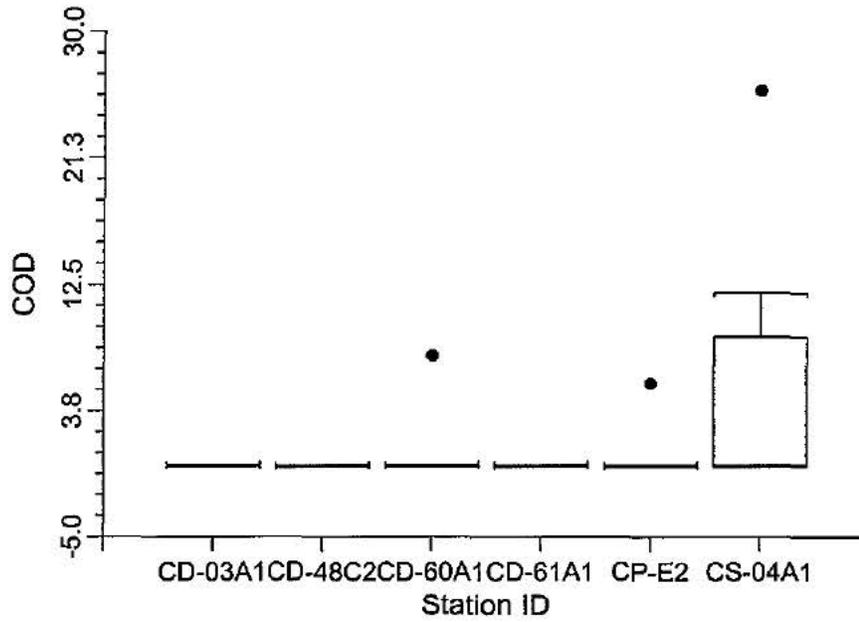
*Lower aquifer results from January 1999 using CP-E2 and CD-48C2 analytical results for calculations.

Bold number indicates a level of significance under 0.05

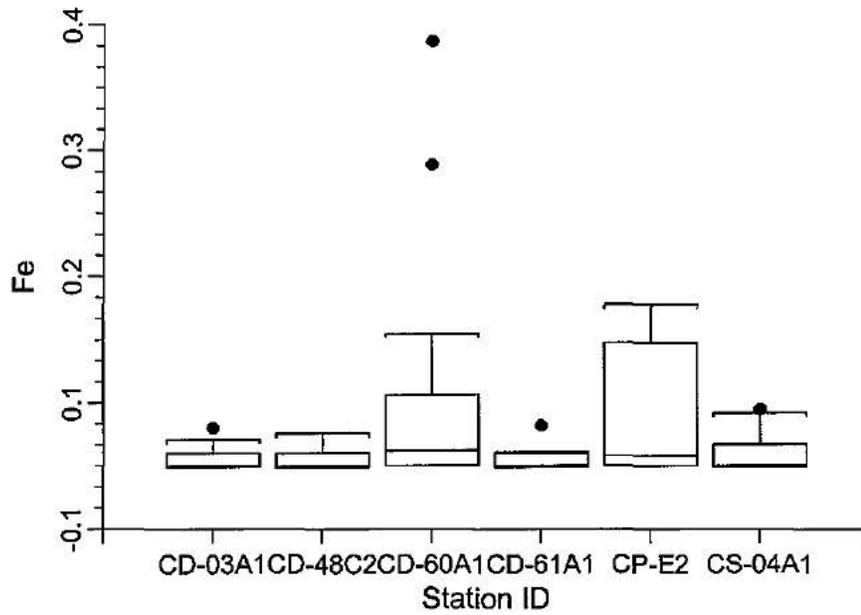
Box Plot Section



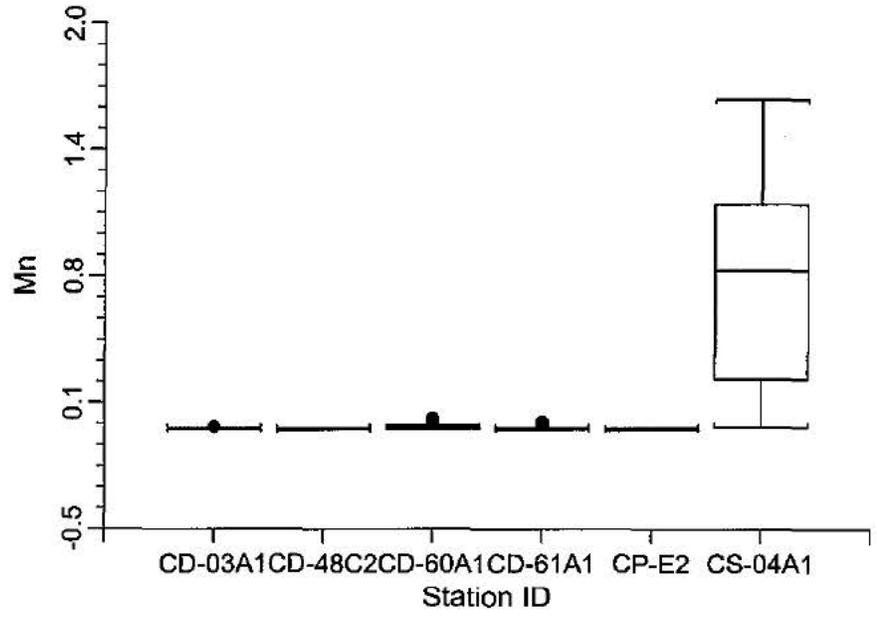
Box Plots



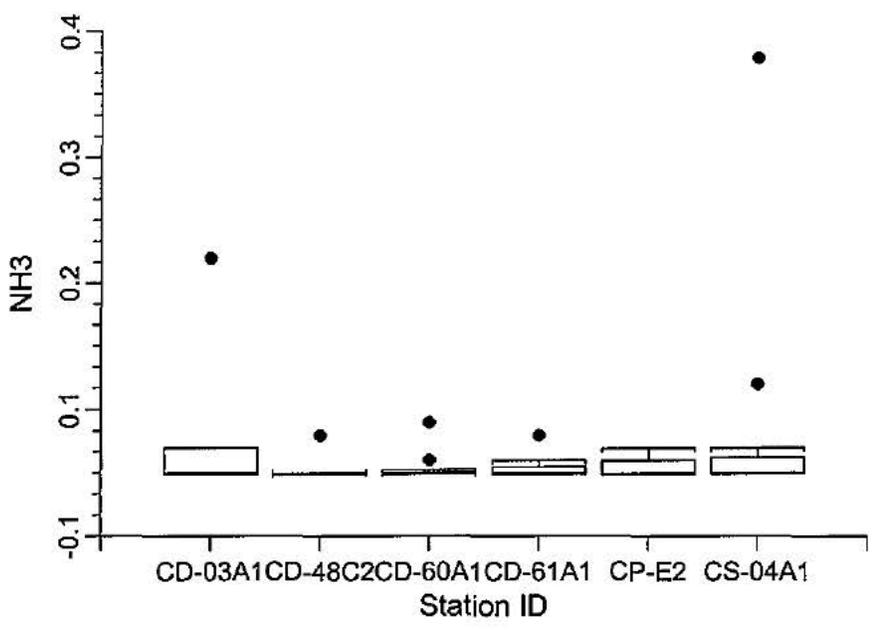
Box Plots



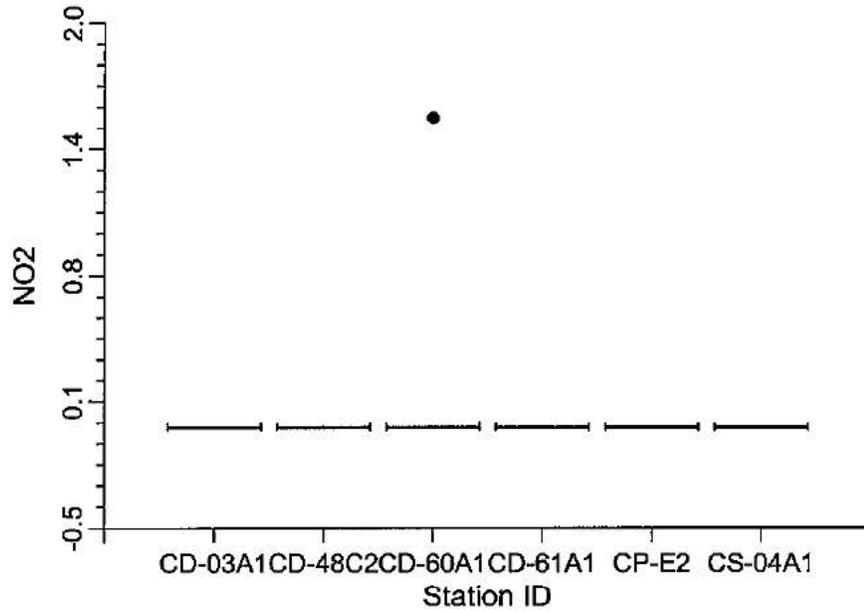
Box Plots



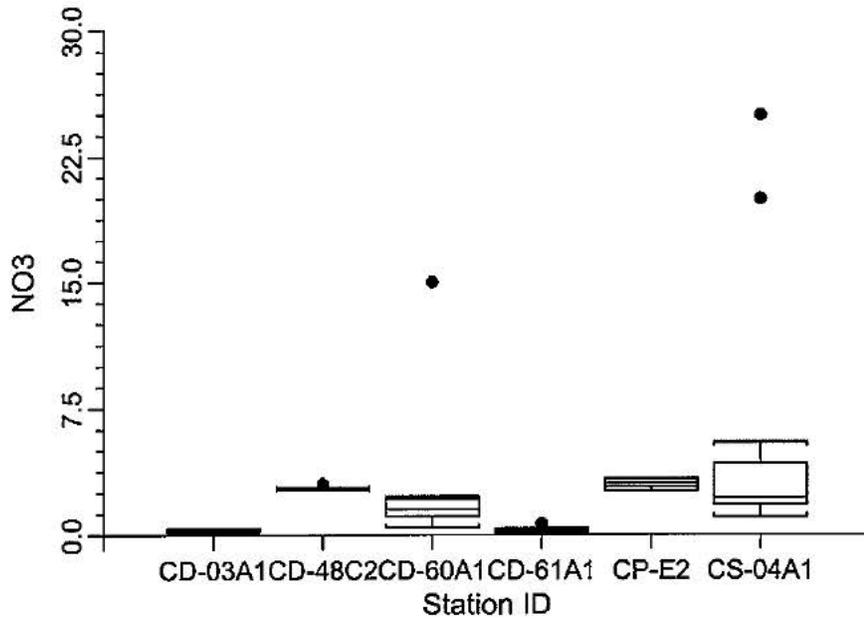
Box Plots



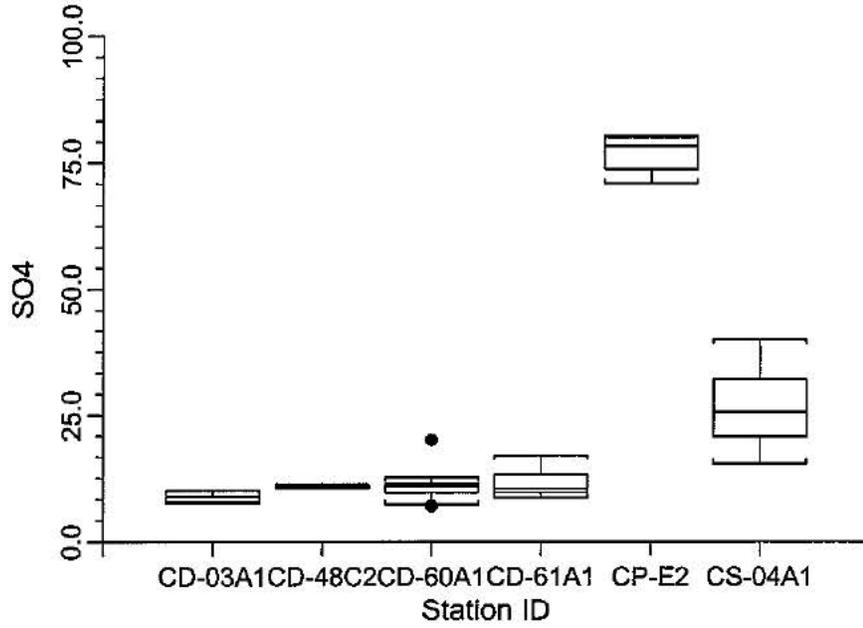
Box Plots



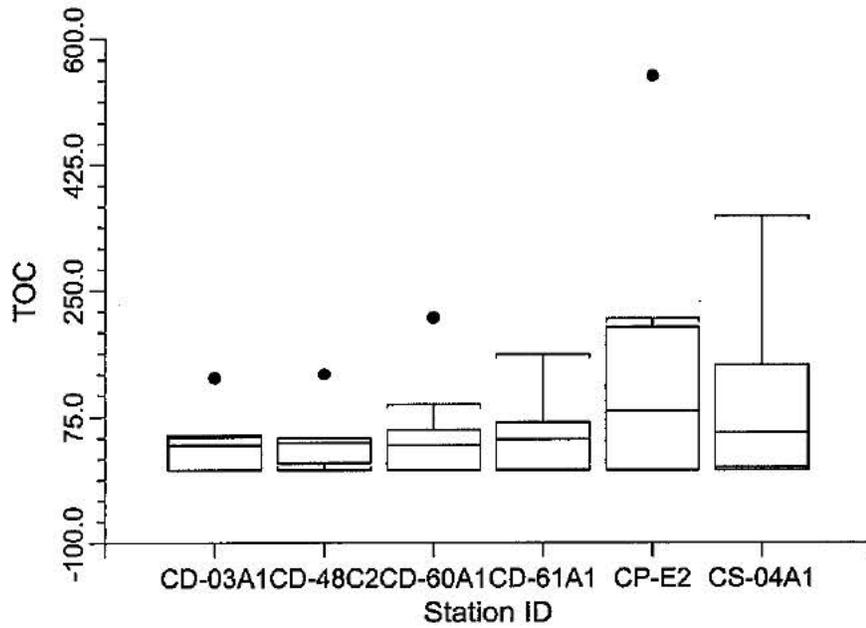
Box Plots



Box Plots



Box Plots



Box Plots

